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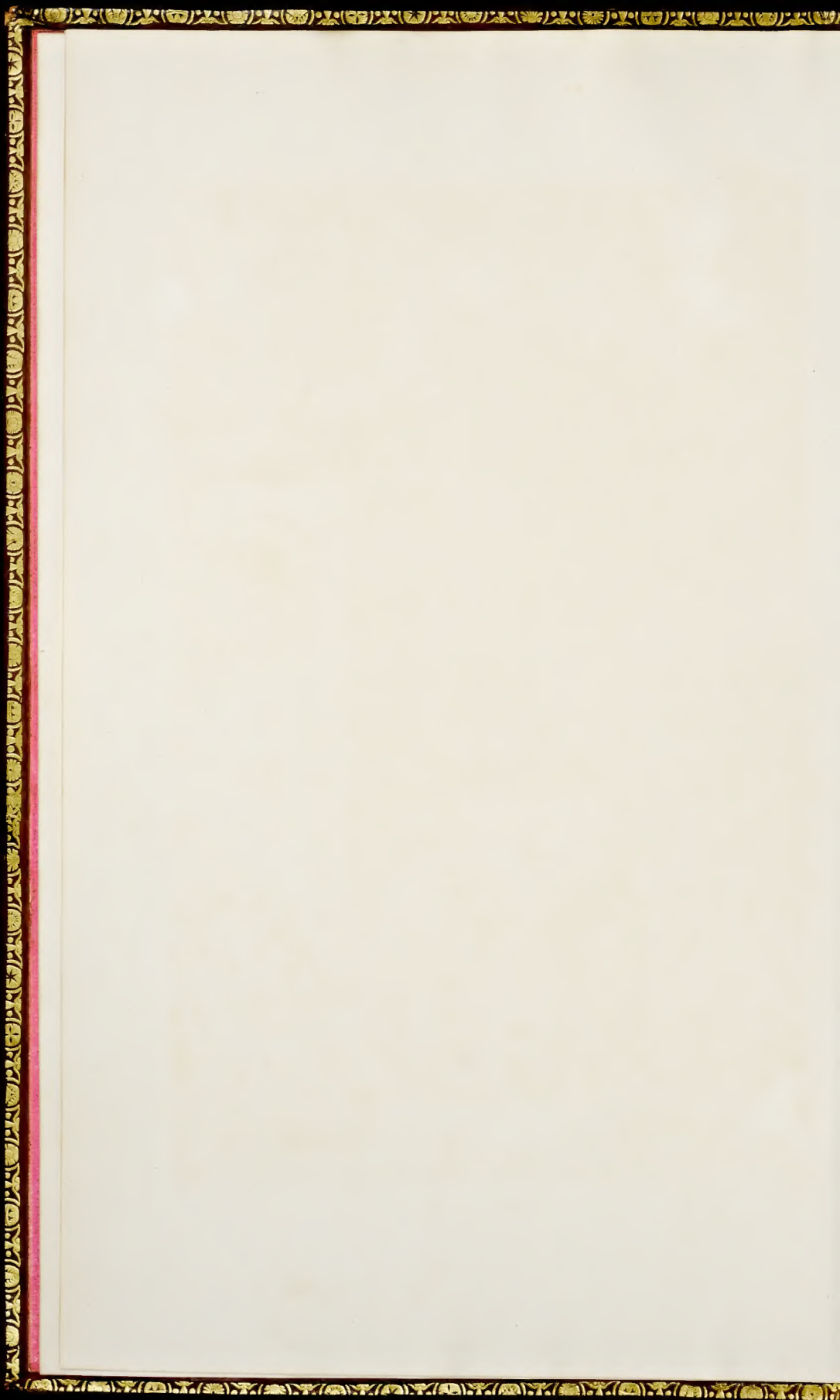
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A
COMPLETE BODY
OF
ARCHITECTURE.

ADORNED WITH
PLANS and ELEVATIONS,
FROM
ORIGINAL DESIGNS.

By ISAAC WARE, Esq.
Of His MAJESTY's Board of Works.

In which are interperfed

Some DESIGNS of INIGO JONES, never before published.



Pantheon

L O N D O N :

Printed for T. OSBORNE and J. SHIPTON, in Gray's-Inn;
J. HODGES, near London-Bridge; L. DAVIS, in Fleetstreet; J. WARD, in Cornhill;
And R. BALDWIN, in Pater-Noster-Row.

MDCCLVI

P R E F A C E.

ON whatever subject a book should be at this time proposed to the public, they might ask what is the need of it: this would be a very reasonable as well as natural question; and the author who should not be able to return a satisfactory answer would not deserve their notice.

Many treatises have been written on the several sciences, and they have been of great service to the world; but after all the improvements they contain, there is room for many more: no one of these subjects is yet exhausted; and architecture, from its great variety, least of all.

The discoveries that have been made, and rules that have been established in this science, are scattered in various books, as they have arisen from the labours of different authors: and many things worthy the regard of all who build, have been found out since any have written on those articles which they concern.

This we apprehend to be the present state of architecture; and we propose, in this undertaking, to collect all that is useful in the works of others, at whatsoever time they have been written, or in whatever language; and to add the several discoveries and improvements made since that time by the genius of others, or by our own industry. By this means we propose to make our work serve as a library on this subject to the gentleman and the builder; supplying the place of all other books: as it will contain whatsoever there is in them worthy regard, and, together with this, whatever we have been able to invent or obtain that is curious and useful.

Those who have studied these things, have in general considered the magnificence of building, rather than its use. Architecture has been celebrated as a noble science by many who have never regarded its benefits in common life: we have endeavoured to join these several parts of the subject, nor shall we fear to say that the art of building cannot be more grand than it is useful; nor its dignity a greater praise than its convenience. From the neglect of this consideration, those who have written to inform others of its excellence, have been too much captivated by its pomp, and have bestowed in a manner all their labour there, leaving the more serviceable part neglected.

This is the character of many of the celebrated books of architecture; and 'tis this has swelled such performances to an expence too great for persons to whom they would be most useful; while, on the other hand, those of small price are, in general, of less value: most of them indeed useless.

Upon these considerations, we have been induced to undertake the present extensive work: the purpose of which is to instruct rather than amuse; in which nothing will be omitted that is elegant or great; but the principal regard will be shewn to what is necessary and useful.

That we may be understood in the succeeding parts of our undertaking, we propose to begin with an explanation of those several terms of art which are used in writing and speaking of buildings.

It may be said these have been rendered intelligible by others; but to this we answer, it has never been yet done perfectly or clearly. In the explanation of one term authors have commonly made use of others, not less difficult, and no better understood; therefore they have done it imperfectly; and we may say with great truth that words alone can never explain them clearly.

In our explication, we shall be careful to use no words that are not perfectly understood, without first rendering them plain and familiar; and wherever the thing expressed by the term is capable of representation by lines, we shall accompany our account of it with a figure, accurately engraved, which will render the expression clear; and striking the eye, will never be forgotten.

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After this, which will be delivered as an introduction to the study of architecture, we shall advance to the consideration of those materials which are used in building; and of which the structures hereafter to be proposed will consist.

In this part we shall treat of the conditions, nature, and qualities, so far as experience has hitherto discovered them, of the several kinds of stone and timber; these being the main supports and principal materials in building.

After these we shall consider the several substances that are used in those cements or mortars which hold the former together; and in this part shall treat of the nature of lime and sand; together with whatsoever other ingredients have been or may be used in cements; explaining their several qualities.

From these we shall enter upon the examination of such metals as are used for covering, and for connecting the several parts of buildings, delivering the qualities of lead and iron, so far as they concern the architect, but no farther: it being our purpose to treat as perfectly as we are able, every thing that relates to our subject; but in no case to expatiate beyond its limits.

In the consideration of stone we shall deliver at large the distinctions of the several kinds of marble; and their uses in plain or moulded work; in slabs or chimney-pieces; and in other forms.

From this we shall proceed to the nature and qualities of the several kinds of ordinary stone used in our buildings, and known among workmen by the several names of Portland, and Bath, Rygate, and Purbeck. Acquainting the reader with their uses in public and private buildings; plain, wrought, or moulded; in chimney-pieces, covings, and other forms; in paving, whether it be in random or straight courses; in steps, astragal or plain; in copings or curbs for iron-work; and finally in the erecting and facing of walls; and in the several parts of the different orders of columns.

After thus delivering an account of the different species of stone, and their particular uses, we shall enter upon the nature and the several sorts of brick.

This may be considered as an artificial kind of stone; of which there are a great variety of sorts, different in value, and suited to various purposes. The use of these in the buildings of this nation, especially in and about London, being much more common than that of stone, they demand the greatest consideration in a body of architecture suited to our time and country.

We shall here acquaint the reader with the nature of their several kinds, as they are distinguished by the workmen, under the names of red stocks, or grey stocks; place bricks and cutting bricks.

We shall from these naturally be led to give an account of the several sorts of tiles, distinguished by the name of plain, pan, and gutter tiles.

In the consideration of bricks, we shall deliver an account of their various uses in walls and ornaments, and in arches and paving.

And, after this, of the several uses of tiles in plain and pantiling, and in all those other services to which either of these materials are applied.

Having here informed our reader of the different uses to which stone and brick are commonly applied, we shall in the close of the work take an opportunity of acquainting him with their settled price, as used in those several forms; which, being at this time a kind of fixed or established rate, will instruct the gentleman who intends to build, in those two great particulars, which are fittest for his purpose, and and what is their several expence.

From this consideration of the materials employed by the architect, their nature, qualities and price, we shall advance to the methods of using them, in the composing the several parts of a building, and in forming the whole.

It is here the consideration of what is strictly and distinctively called architecture begins; and in this place it may be proper to say something concerning the parts of this noble science, and to give our reasons for the order wherein we shall treat them in the succeeding chapters.

Architecture may be considered under two heads; with respect to the preparatory studies, and to the science itself.

Among the studies that lead to it are to be reckoned arithmetic, geometry, perspective, and mensuration.

These,

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These, so far as they are necessary to the builder, it might be natural to introduce, in a regular course of the study, before we delivered the principles and practice of the science itself; and in this order we should have disposed them, had there not appeared reasons to the contrary.

This work is calculated for general use; the gentleman as well as the builder is intended to be assisted by it; and we cannot doubt but the far greater part of our readers are acquainted already with so much of those studies as may be needful to the present subject.

For this reason we have avoided the tediousness and disgust that must have arisen to many from giving courses of those several sciences in the first sheets of our publication; but for the sake of such as shall make this book the whole foundation of their knowledge, we shall at the end of the book give a concise view of those several sciences, so far as they regard, or may be subservient to architecture.

Having thus explained what is needful to be understood in the beginning of our work, and reserved the more abstract considerations which regard it, to the end; we shall proceed in a regular order to describe and explain the several parts of which a building is to consist; and from these advance to the structure of the whole.

We shall begin with what is most familiar and simple, and thence by gradual additions rise to those things which are more complicated and difficult; and thus lead, as it were by the hand, the careful student from the raising of the smallest and plainest, to the finishing of the largest and most ornamented structure.

Of this the practical reader may be perfectly assured, that with knowledge thus easily obtained, he will be able to undertake and complete the greatest edifice; and that he who is ignorant of the principles of the science, will not be able to set about the least without perplexity and disadvantage.

Having premised a distinct account of the materials, we shall in this place enter on the consideration of the essential parts of a building, and thence proceed to the designing, raising, and completing it, of whatsoever kind: in which the knowledge and judgment of the undertaker are to shew themselves in the properly constructing the principal and the useful parts of the fabrick, and in the selecting and disposing those which are ornamental.

We shall begin with the situation; and thence advance to the doctrine of foundations; and shall lay down the proportion these ought to bear to the walls raised upon them: and shall deliver several rules, illustrated with figures, for piling and laying them, according to the qualities of the ground.

From these we shall come to the consideration of sewers and drains, and to the raising of walls, of whatever materials; explaining their structure and proper diminutions; with the doctrine of chimnies, roofs and floors.

We shall then consider architecture as divided naturally into two parts:

The first comprehending what is fixed by rule.

And the second, what is left to fancy.

Under the former head will be delivered the doctrine of the five orders of columns: for what relates to these is all that is fixed or established in the science.

Under the second will be considered the construction and disposition of the several parts of a building; all which is left to the imagination of the architect, and forms proper scene of his employment in useful edifices.

In speaking of the orders we shall shew what is fixed, and what is arbitrary; for the variations which are found in them among the works of antiquity, shew that something is left to fancy even here.

The projecture of the Doric capital in the theatre of Marcellus, is seven minutes, or fixtieths of the diameter of the column, and three quarters; and in the Coliseum it is seventeen. Nor do the rules of authors differ in this respect less than the practice of the antient architects: for Alberti makes this projecture only two minutes and an half, whereas Palladio allows it nine.

After other instances of this kind, to prevent surprise at such freedoms as we may find it necessary to use with what is esteemed most sacred among architects, we shall lead the unprejudiced reader, in the study of these orders, to a distinct and strict consideration of the proportions and characters of the members of their several pedestals, columns, and entablatures.

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We shall consider first the three original and great orders of the Greeks, the Doric, Ionic, and Corinthian; explaining from their forms and structure their intents and uses.

The doric made for strength and service, short in proportion to its thickness, and without ornaments on its base or capital; the Ionic finer and more decorated, of a middle nature, between the strong and delicate, taller than the Doric, and adorned with volutes; and lastly the Corinthian, light and elegant, loftier than the Ionic, and ornamented in the capital with rows of leaves, and volutes to support the abacus.

After these we shall speak of the two additional orders of the Romans; the Tuscan, lower, plainer, and stronger than the Doric, with no ornaments on its capital, base, or entablature, and the Composite, improving on the height and delicacy of the Corinthian; and adding more decorations.

As an addition to this head, we shall consider also, under the name of orders, since others have been content to call them so, the Attic, consisting of pedestals with their caps; the Persian, which has slaves instead of columns; and the Caryatic, which has women.

From these we shall be naturally led to consider pilasters, which are placed sometimes naked and free, and at other times affixed to, or in part immersed in the wall; as in colonnades. Under this head we shall treat at large of their projecture, their diminution, the manner of placing the entablature upon them, when it lies upon a column at the same time; and lastly, of their flutings and their capitals.

These are the articles of this great science which have been used most to perplex the student; but we shall endeavour to render their forms and uses as familiar as any other part of the subject, and to explain all that relates to them equally to the builder and gentleman.

When we have thus laid down the principles of architecture, we shall proceed to the general practice. We shall lead our student to the planning out the edifice, whether for the country or a town, and whether for convenience or magnificence; and to the completing it with propriety, elegance, and taste.

We shall particularly consider under this head the two great articles of doors and windows.

With regard to the first, we shall lay down their regular proportion in respect of their height and breadth; their proper position in the several stories; together with their general and particular construction: and shall accompany our observations with a great variety of designs for doors, and their ornaments.

In treating of windows, we shall instruct him to proportion them in number and magnitude to the rooms they are to enlighten; and shall lay down the just dimensions of those of the several different stories, both with respect of their height and breadth, and their relation to the piers between them.

From the walls of the building we shall advance to the roof, the framing of which we shall explain according to its several forms and kinds; and shall lay down rules for the completing it in each in the most perfect and masterly manner.

Having thus gone through the structure of the outside of the building, we shall consider its inner division into rooms; their distribution, and offices; and their proportions, in their several dimensions, and with respect to one another.

We shall in this part lay down, for the use of the practical reader, sections of rooms of various kinds and forms, and deliver rules for the constructing of innumerable others; and for the carrying up a great variety of plain and decorated staircases.

Having designed and distributed the rooms, placing them in parts of the house suited to their several purposes, and proportioning them to one another, we shall advance to that most considerable article of elegance, their ornaments.

Under this head comprehending the great variety of chimney-pieces, ceilings, and other decorated parts. For these we shall first deliver certain fixed and invariable rules, and afterwards lay down a great number of designs, new, and adapted to the present taste.

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Having thus fully described the several parts of which a house is to consist, we shall rise to the consideration of it entire. When the reader has been informed how to design, erect, proportion, and decorate these several portions of the edifice, we shall instruct him in putting them together, and forming a complete whole from those perfect and proportioned parts.

We shall thus give him full and compleat directions for the beginning, carrying on, and finishing his work, whether it be small and plain, or large and decorated; leading him from the construction of the meanest private house, to that of the most superb publick building: and shall instruct him to work in every part with propriety.

When we have thus conducted him through every part of the house, we shall lay before him a variety of designs for its exterior ornaments, under the heads of piers and other decorations, and we shall here enrich our work with a number of new and beautiful designs for seats, bridges, and temples.

In all these, as well as the several other parts of this undertaking, we shall endeavour to be plain in the expression, and full in the descriptions: and as we propose nothing of the practical kind but what will be illustrated with figures, we have made it a principal part of our care that the engravings were executed by the most masterly hands.

By these means we hope to lay down in one body the whole science of architecture, from its first rudiments to its utmost perfection; and that in a manner which shall render every part of it intelligible to every reader; to acquaint the gentleman with what, on every possible occasion, he should design in his edifice; and to instruct the practical builder in not only what he ought to do, but how he should execute it, to his own credit, and to the advantage of the owner.

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ERRATA.

Page 7, line 6, for *hawnset*, read *hauncet*.

9, — 26, for *Tores* read *Torus's*.

14, — 41, for *Tores* read *Torus's*.

39, — 17, for *on* read *no*.

43, — 35, *one* too many.

60, — 1, for *differece* read *difference*.

63, — 6, *dele be*.

69, — 36, for *second* read *second*.

73, — 6, for *seldm* read *seldom*.

74, — 3, for *price* read *use*.

In explanation of plate IX, line 6, for *lana* read *lead*.

Page 112, line 6, for *mortis'd* read *groov'd*.

113, — 8, for *the* read *they*.

114, — 16, after when it differs, read *from those rules*.

119, last line, for *there* read *they*.

134, line 3 from the bottom, after two read

minutes.

142, — 33, for *a quarter* read *three quarters*.

142, — 37, for *half* read *quarter*.

147, — 4, *dele to*.

169, — 19, *dele and they are six deep*.

Page 179, line 21, for *ho f* read *quarter*.

179, — 25, for *23 feet* read *22 feet $\frac{11}{16}$ of an inch*; and for *quarter* read *three quarters*.

179, line 23, read *ten inches and $\frac{1}{2}$* .

183, — 27, read *found themselves*.

241, — 17, for *is* read *was*.

300, — 22, for *Venetian* read *Baw*.

300, — 25, for *Venetian* read *Baw*.

303, — 24, for *Baroccio* read *Giacomi Baroccio da Vignola*.

305, line 24, for *decagons* read *octagons*.

343, — 19, for *that* read *that*.

452, — 20, for *are* read *face*.

504, — 27, for *distribution* read *distribution*.

520, last line, for *Calvus* read *Caducius*.

522, line 16, read *not to transgrejs*.

575, — 19, for *entablature* read *cornice*.

575, — 27, for *entablature* read *cornice*.

580, — 29, for *Attic pilasters* read *pedestal*.

611, — 11, for *builders* read *builders*.

632, — 32, for *architect* read *architecture*.

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A. Asperduet

A
COMPLETE BODY
OF
ARCHITECTURE.

BOOK I.

CHAP. I.

AN EXPLANATION of the *Terms of Art*, which are used in writing or speaking of BUILDINGS.

THE builder bestows a great deal of pains on those parts of an edifice which are little regarded; and the case is the same in forming a book upon the subject. The present introductory chapter is an instance. Though perhaps the least conspicuous article in our undertaking, there is none that requires a stricter care or attention.

We are to lay down a system of architecture, and it is impossible to do this without using many terms with which the reader who has not before considered the subject cannot be acquainted. It is necessary to explain these, and to fix their meaning on his memory. So much has been done by others in this respect, that it will not be easy for us to acquire praise in the execution of it; and yet so much more than all that has been done is needful, that if we do not succeed in the design of making them remembered, as well as understood, better than has hitherto been effected, we shall have written in this part to little purpose.

N^o. I.

B

The

Book I.

The hope we have to succeed better is principally founded on the assistance of those figures we add to our explanations. In these we have caused the most considerable of the objects to which we refer, to be represented before the eye, as well as to the imagination; first together, and afterwards in their separate parts, with their names annexed. These we conceive to be the principal means by which we shall convey and establish the necessary knowledge on this head; but though the principal, this is not the only source from which we flatter ourselves with that expectation.

The books wherein these terms have already been explained, the writings of architects, and the several dictionaries lie before us; and we hope that, seeing and avoiding their errors and defects, we shall not fall into so many nor so great. If what has been published by others were sufficient, we should still have inserted such a table here, because we shall not refer the reader to other works: but we apprehend something more is wanting.

We can perceive how these explanations have been copied from the earlier into the later, and from the greater into the lesser of those books; and in what manner they have been transcribed from the last into the modern dictionaries. In the writers of architecture the terms recited are too few and they are explained too slightly: in the dictionaries too many are collected, and they are treated too diffusely. We shall endeavour to avoid each extreme; we would not leave any term that is in use unexplained, neither would we tire the student with a multitude which he will never see elsewhere. In the same manner, as we shall take care to give a sufficient explanation, we shall avoid writing treatises on each, reserving that to the body of our work.

The writers of architecture have said too little on these terms, because they have supposed their readers acquainted with some part of the science before; in dictionaries we find too much, because they have no other opportunities of entering on the subjects: and sometimes they err from inaccuracy in the transcribing. It is very difficult to copy with punctuality what is not understood; and these persons cannot be supposed masters of every thing concerning which they must write.

We shall endeavour in the first place to be correct; and next to proportion the manner and scope of our explanation to the importance of the term. Where that is of less consequence, we shall add little illustration; where it is of more, we shall enter farther into particulars; which the reader, remembering this is not only an explication of words, but an introduction to architecture, will excuse. We shall endeavour, on each article, to inform the mind, without burthening the memory; and to deliver in this place so much of the general principles of the science, that the student shall be able not only to comprehend what he reads and hears, but to understand what he sees.

We shall in some places add particular accounts to these general considerations, that any other book of architecture, as well as this, may be read without perplexity; and that the careful reader, with so much knowledge only, may be able to speak in proper terms, and describe intelligibly what he sees.

The bare explanations being in themselves necessarily the same, will appear alike in whatever work they occur; to be correct in this part is all that can be attained: in the illustration we shall have recourse to instances from the antique, and to the practice of the greatest architects among the moderns, that such things as are explained in other books may be exemplified here. We shall omit the common and vulgar terms understood by every labouring person, and reserve to their places in the work the more critical consideration of many others. What we intend here is to give the full explanation of the term; and we shall endeavour to be useful and not tedious.

ABACUS.

ABACUS.

Chap. I.

A square piece, which serves as a covering to the capitals of columns. See the *Tuscan* Abacus, *abacus*, Plate II.

It is properly the uppermost member of the capital, whereon the architrave rests; terminating the column with its capital at the top, as the *plinth*, another square piece to be described hereafter, does with its base at the bottom.

The term is Latin, but has been introduced from the Greek, ἀβάξ in that language signifying the same thing; and its origin is from a Hebrew word of like sound signifying a *shelf*.

Some have said the original of the *abacus* was a square tile, laid over a basket, round which grew leaves of the *acanthus* or *bear's-breech*, whence the *Corinthian* capital was derived. But the *abacus* is of earlier origin. The *Doric* order was long prior to the *Corinthian*, and we see an *abacus* on that in the remains of the *Parthenion* at *Athens*, though the columns have no base. In the *Corinthian* order it indeed represents the tile; but its four sides are segments of circles. In the earliest instances, before those licentious ornaments of capitals were introduced, it served only to give breadth to the top of the column, and a level support to the entablature. We see the *abacus* of the *Doric* capital very large in the most antient buildings, for this reason.

In the origin of architecture, trunks of trees were raised upright for columns, and others laid across them to bear the roof. The *abacus* was then a square piece added to the top of the column, for the supporting and holding those others more conveniently: this was its original.

In consequence of this origin, the *abacus* was made square and plain on the sides, as is seen in the antient *Doric*; and in the *Tuscan* added by the Romans: but in the *Corinthian* and *Composite* it is altered. Its four sides are hollowed or arched inwards, and it is decorated in the center with a flower, or other ornament.

In the *Tuscan* order the *abacus* is of a great thickness, and is called by some the *die* of the capital; in the later *Doric* a cymatium is sometimes put over it, so that it loses even its place: and in the *Ionic* it is wrought with an ogee crowned with a fillet.

In the *Tuscan* order it is of the same form with the plinth of the base.

Abacus is used in a particular sense by *Scamozzi*, signifying not the crowning of the capital of a column, but a concave moulding in the capital of the *Tuscan* pedestal; this however is wrong, as it may breed confusion.

ACANTHUS.

An herb kept in our gardens, and called in English *bear's-breech*; the leaves of which *Acanthus* make an ornament in the *Corinthian* and *Composite* orders, and are said to have been the occasion of the former. See Plate II.

There are two kinds of this plant, the one called the wild *acanthus*, which has prickly leaves, the other the *acanthus mollis*, or smooth *acanthus*, or garden *acanthus*, having no prickles. The antients represented the leaf of this kind; but we often see the prickly *acanthus* in more modern works. *Acanthus* is the Greek name of this plant; the Latins call it *branca ursina*, though they often adopt also the Greek word.

The place of the *acanthus* leaves is on the bell of the capital, which they cover; and they are the distinction of the two rich orders from the three others; and their disposition in a separate manner on those two distinguishes them from one another. There

also

A COMPLETE BODY

also rise stalks among these leaves, which in the *Corinthian* order curl under the *abacus*. *Callimachus* was the inventor of the *Corinthian* capital, and it arose from this accident; a basket was set upon the ground, and covered with a tile; a root of the *acanthus* being there, the leaves and stalks rose up, surrounded the basket, and curled back at the tile; the appearance was so pretty that he carried it into the capital of a new order. The basket is the bell of that capital; the *acanthus* leaves and stalks are the foliage and volutes, and the tile the *abacus*.

The Greek sculptors have taken some liberties in their representations of the leaves of this plant. Sometimes the indentings are too deep, and often too numerous for nature. They also use occasionally olive leaves and laurel leaves in the division, but these they carve with so much freedom, and so little regard to truth, that, like the paintings of our heralds, if we were not told what they represent, we might be perplexed in guessing. In the *Composite* capitals of *Titus* and *Septimius Severus* at *Rome*, the leaves meant for the *acanthus mollis* are indented so deeply that they represent those of parsley. The leaves in the capital of the temple of *Vesta* at *Rome* are called laurel, but they differ from what is usually made for the *acanthus* only in the division at the ends; this being all the architects mean by that term.

In the remains of the temple of the sun at *Palmyra*, there are *Corinthian* columns, the bell only of whose capital remains: they make a very strange appearance. The columns are of white marble, and the leaves probably were of brass; for the holes remain by which they were fixed; and they seem to have been stolen for the value of the metal.

ACROTERIONS.

Vulgarly called *acroters*. Certain little pedestals placed at the two extremes, and on the middle of pediments. These are commonly made without bases. They are placed on frontispieces in the same manner as on pediments, and in their origin were intended to support statues, though they are more frequently naked; the word is Greek, and signifies the summit or highest point of any thing.

Vitruvius has given rules for their dimensions, according to which those at the extremes ought to be half the height of the tympanum, and that in the middle one eighth more.

The term is used also to signify those sharp pinacles and separate battlements which stand in ranges about flat buildings, with rails and balusters; this is conformable enough to the original meaning of the word, but it were well that there never were more than one distinct sense to the same term, to prevent confusion.

Acroterion is also used by some to express a figure of stone or metal, placed as a crowning to any building, as on the top of a temple or otherwise; but its original sense is a pedestal, and it should be used in no other.

ALCOVE.

A part of a bed chamber in which the bed stands, separated from the rest of the room by columns, pilasters, or other ornaments. This is the original and strict meaning of the word, it being derived from *alcoba* in the Spanish, which expresses a retired place for sleeping: but it has been made to express also any thing of the same or like form. Where a part of a room is separated by a screen of columns, and has seats or whatever else in it, though no bed, it is called an *alcove*; and the seats in gardens when they in any manner approach to the form of such a part of a room, are in the same manner called *alcoves*.

OF ARCHITECTURE.

AMPHIPROSTYLE.

In the antient architecture, a temple that had columns in front and behind.

AMPHITHEATRE.

A place of old destined to the exhibiting of shews. It was spacious and large, of a round or oval figure, containing a *pit*, called its *arena*, which was encompassed with a great number of seats, in rows rising gradually over one another: and it usually had porticos both within side and without.

The theatre of the antients was in form of a semicircle, but in measure exceeding the exact semicircle by one fourth part; and two of these theatres put together formed what they called an *amphitheatre*. The derivation of the word is from two Greek ones, *αμφι*, about, and *θεατρον*, a theatre.

The *amphitheatres* of the antients were built for the entertaining the people with combats and other pompous spectacles; and their extent was made thus great for the receiving the multitude. We have the remains of three very considerable ones standing at this time; the *Coliseum*, which was an *amphitheatre* of *Vespasian*, another at *Verona*, and the third in *Languedoc* near *Nismes*; and there are also remains of some others.

ANCONES.

A term by which some express the consoles or ornaments cut on the keys of arches, and serving upon occasion to support little busts or other figures. *Vitruvius* calls them by this name.

ANNULET.

A little square moulding serving to crown or accompany a larger, or to separate the flutings of a column: 'tis the same that is called *list*, or *listella*, and will be explained farther under that head. See *Plate III*.

ANTÆ.

A name by which *Vitruvius* has called pilasters when they are adjoining to the wall: when they are free or insulate he calls them *parastatæ*. In the first case they usually have no diminution.

ANTIQUE.

A term at large expressing any thing antient, but appropriated to signify a building, part of a building, or other work, that has been executed by Greeks or Romans, when the arts were in their greatest purity and perfection among those people. The period of things called *antique* extends from the time of *Alexander the Great*, to that of the emperor *Phocas*, when *Italy* was over-run by the *Goths* and *Vandals*. In the most strict sense of the term *antique*, it takes in only the express period when some of the great works of antiquity were made, that period commencing when the arts had arrived at their perfection, and ending when they began to fall to decay. In this sense *antique*, which properly signifies antient, is used as a term distinguished from *antient*: all old buildings, or remains of buildings, of other ages being called *antient*, but those erected within that period only being honoured with the name of *antique*. But this is a vague and arbitrary sense: the derivation of the word being from the Latin *antiquus*, which signifies old, without any limitation to one period of time more than another.

ANTIQUE MANNER.

A phrase used to express any modern building, or part of a building, which is executed according to the strict rules and good taste of the antients. The term *antique*, we have shewn in its larger sense, stands as a distinction from modern; and thus the

N^o. I.

C

antique

5
Chap. I.
Amphipro-
style.

Amphi-
theatre.

Ancones.

Antæ.

AntiqueMan-
ner.

Book I.

antique taste is understood as distinguished from the modern, which is fuller of ornament and less correct.

ANTIQUO-MODERN.

Antiquo-Mo. A term used by some to express buildings which have been executed since the time that is comprehended under the term *antique*, and yet too long ago to be properly called modern: our old *Gothic* churches, and other structures of that kind and time, are called *antiquo-modern* edifices.

AQUÆDUCT.

An artificial canal built for the conveyance of water from one place to another; either running under ground, or raised above it: and serving to carry the water to places according to their level, notwithstanding the unevenness of the ground between.

The word is derived from the Latin *aque ductus*, a conduit of water. The *aquæducts* of the antients were many of them very great and astonishing works; some are preserved in large remains to this time. We are told that the *aquæducts* in *Rome* brought into that city daily more than five hundred thousand hogheads of water. The lesser *aquæducts* were of wood, the larger of stone; and those raised above the ground were supported by arches, in the manner of bridges, from one rising-ground to another, often at several miles distance; the remains of one are shewn in the head-piece to this chapter.

ARCH.

A concave or hollowed piece of building, constructed in such a manner that the several stones of which it is composed keep one another in their places. The terms *arch* and vault properly differ only in this, that the *arch* expresses a narrower, and the vault a broader piece of the same kind. The principal difference in the form of *arches* is that some are circular, and others elliptical, the former having a larger or smaller part of a circle, the other of an ellipsis.

What are called *strait arches* are those frequently used over doors and windows, the upper and under edges of which are strait and parallel, and the ends and joints all pointing toward a centre.

The space between two piers of a bridge is called an *arch*, because usually arch'd over.

Triumphal *arches* are magnificent entries into cities, erected to adorn a triumph, and perpetuate the memory of the action. The *arches* of *Titus* and *Constantine* make at this time a great figure among the ruins of old *Rome*.

ARÆOSTYLE.

Aræostyle. A particular disposition of columns with respect to the intercolumniations or spaces between them, used by the antients in many of their buildings. They had peculiar terms for expressing the various measures of these spaces, and this was that which denoted the largest of all. The columns in the *aræostyle* method were placed at eight modules or half diameters, that is, at four diameters distance; and sometimes at ten modules, that is five diameters. *Vitruvius* calls it a distance of four diameters, and this is the strict proportion of that intercolumniation.

The word is Greek, *αραιος* is rare, and *στυλος*, a column. It therefore denoted the placing them in the most rare or remote manner. The *aræostyle* method of building suits the *Tuscan* more than any of the other orders; the massyness of those columns best keeping the distance.

ARCHITRAVE.

A part of the entablature placed over a column. It is the lowest member of that ornament, and rests immediately upon the capital, lying upon its abacus before described. See *Plate 2.* The

OF ARCHITECTURE.

The *architrave* is understood to be the principal beam laid upon the columns, and serving as a base to the rest of the superstructure. Its name expresses this, being derived partly from the Greek and partly from the Latin; the first half from ἀρχή, which in Greek is *principal*, and the second from trabs, which signifies a *beam*. Chap. I

This member is made sometimes of a single sumner, as we see in many of the old buildings, and sometimes of several haunses, as is common in modern works. The old writers sometimes give it another name, the *epistyle*, which is derived from the Greek ἐπί, upon, and στυλος, a *column*, because of its place as before described; it lying immediately upon the columns.

The *architrave*, though its place be the same in all the orders, differs in form in each. In the *Tuscan* it consists only of a plain face: in the *Doric* it has two faces generally allowed it; but in the oldest buildings in this order we see it plain, and with only one face and its annulet, as in the *Tuscan*; in the *Ionic* it consists of three faces, and so in the more decorated: this is one of the parts in which architects allow themselves a great deal of liberty, and in which too many follow their fancy rather than any rule.

ARCHITRAVE of a chimney-piece,

Is that part we more commonly call the *mantle-piece*, or *mantle-tree*. The *architrave*, Architrave of a chimney-piece though a regular part of the entablature of every order, yet is not limited to be placed in that circumstance only; for besides these *architraves* of chimney-pieces, there are *architraves* of doors and windows.

All *architraves* finish either with a *tænia* or *fillet* only, or with an *ovolo cavetto* and *fillet*, or a *cima reversa* and *fillet*. These terms will be explained hereafter in their place; in the mean time the *architrave* may be perfectly understood from this description and the figures, in *Plate II*.

ASTRAGAL.

A little round moulding, which in the orders surrounds the top of the shaft or body of the column. It is called also the *talon*, and *tondino*; it is used at the bottoms as well as tops of columns, and on other occasions: it properly represents a ring, on whatever part of a column it is placed, and the original idea of it was that of a circle of iron put round the trunk of a tree, used to support an edifice to prevent its splitting. Astragal.

It has its name from a Greek word ἀστράγαλος, which signifies strictly a bone in the foot, to which this round moulding was imagined to bear a resemblance.

The *astragal* is often cut into beads and berries, and is used in the ornamented entablatures to separate the several faces of the *architrave*.

ATTICK.

A term that may properly express any thing invented, or most used in *Athens*: but we appropriate it principally to two subjects in architecture, the *Attick* order, and the *attick* story.

ATTICK ORDER.

This is a little order, which consists of pilasters. They are low, and are generally placed over some other order of columns. We call them an order, in compliance with the common manner of expression, but they do not deserve that name: they have been properly enough called a *bastard* order, and a *false* order; but there are buildings in which they make a pretty appearance. An instance may be seen in *Palladio's* second book, *Plate 12*. They make an elegant crowning of a building when they are properly introduced, but we see them sometimes brought in very monstrously, to the disgrace of the architect, and disfiguring of the edifice. Attick Order.

Book I.

ATTICK STORY.

Attick Story.

A story at the upper part of a house, where the windows are usually square.

The *Attick* base is a very beautiful base used to columns of different orders, and will be explained hereafter under the article *base*, with the assistance of a figure expressing its several parts.

BALCONY.

Balcony.

Properly signifies a projecture from the surface of a wall, supported by consoles or pillars, and surrounded by a balustrade. The balusters should be of such height as to serve at once as a defence against falling, and a support to the arms when any one leans to look from the building.

BALUSTER.

Baluster.

A small pillar or pilaster serving to support a rail, and making when joined and continued with others the balustrade we have just named.

The *baluster* may be either round or square, but should be adorned with mouldings and other decorations, according to the richness intended to be given to the balustrade. Our *balusters* of wood are usually turned, and often very handsome.

BALUSTRADE.

Balustrade.

A connection of a number of balusters, used for defence or ornament, on balconies, terraces, and the like, and round altars. The balusters are of iron, wood, stone, or other materials, and the *balustrade*, when finely executed, has an elegant appearance. We have of late, in some handsome buildings, miserably supplied the place of the ancient *balustrade* by *Chinese* rails.

The *balustrade* may consist of one or more rows of balusters, and may serve as a rest in front of terraces, and as a defence on levels: and it is sometimes used, with a great deal of propriety and beauty, by way of separation between one part of a building and another. The baths among the ancients were thus encompassed with rails, and the word expressing that separation was *balustrum*: hence comes our word *balustrade*; and *baluster* for the single pillar.

BAND.

Band.

A term frequently used to express what we more usually call the face, or faces, *fasciæ*, of an architrave: but it properly expresses any flat and low member, whatever be its place, if it be not very deep.

BANDELET.

Bandelet.

A term that is properly a diminutive of the former, and is used to express any very narrow flat moulding. The *tænia* which crowns the *Doric* architrave, is called the *bandelet* of the *Doric* architrave.

BASE.

Base.

A part placed at the bottom of a column or pilaster, as the capital is at the top.

The word signifies a support of any kind, and for any thing; its derivation being from the Latin *basis*, of which that is the sense; but we have appropriated it in a manner to this lower part of columns.

The ancients, in the early times of architecture, used no *bases*. The *Doric* columns, in the temple of *Minerva* at *Athens* have none; but stand immediately upon the floor of the porch. Columns afterwards came to be supported on square pieces called plinths, and after that on pedestals. When we see a column, of whatsoever order, on a pedestal, the *base* is that part which comes between the top of the pedestal and the bottom of the shaft of the column; when there is no pedestal it is the part between the bottom of the column and the plinth; some have included the plinth as a part of the *base*, but it is properly the piece on which the *base* stands, as the column stands upon that.

Part of a Building explaining some Technical Terms



Plan upon the Principal Floor

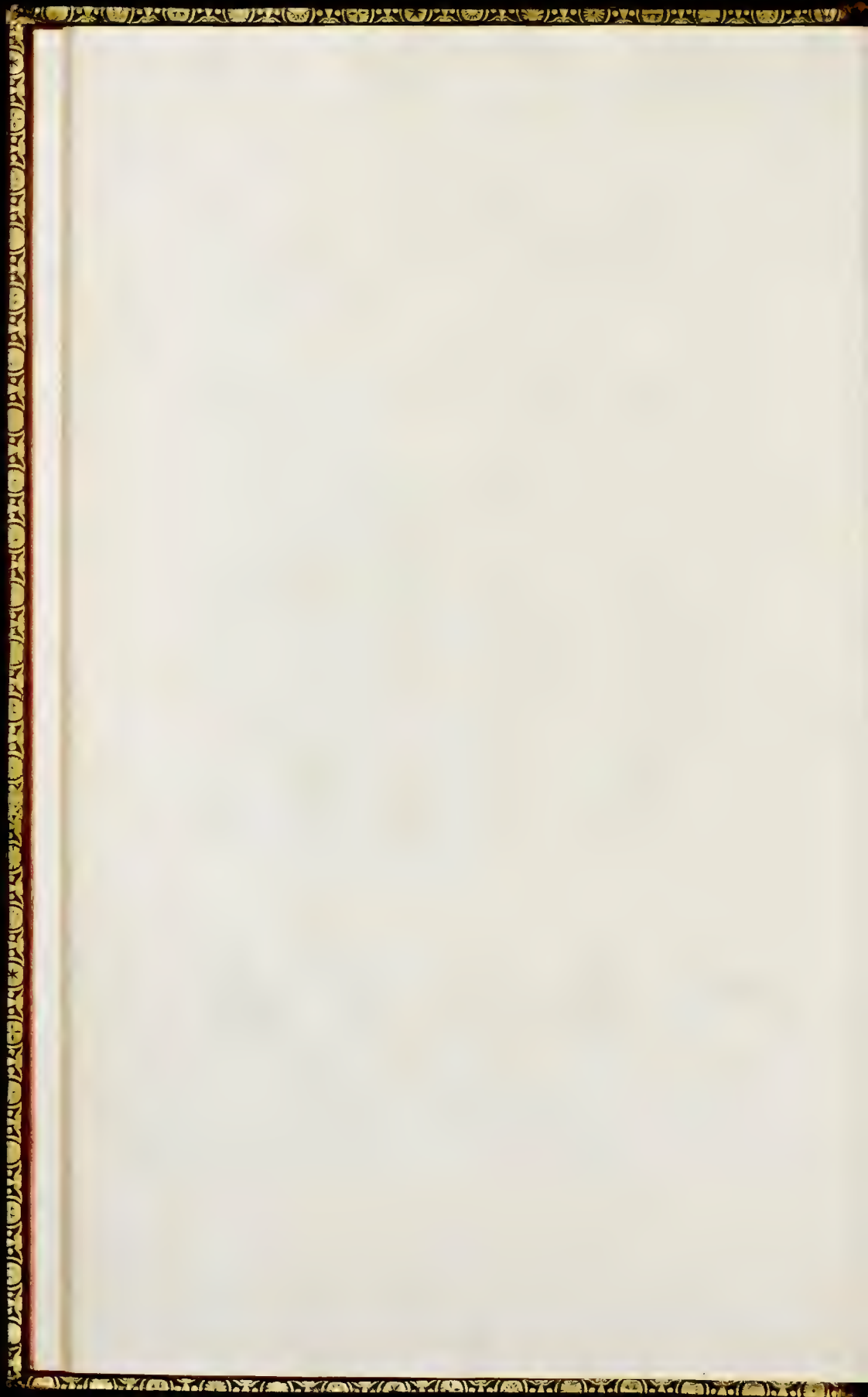


A Basement Story
B the Plinth
C the Facia
D Principal Floor
E Pedestal

FF Double Pedestal
G Pedestal continued
H Column
I Pillaster
K Entablature

L Pediment
M Attick story
N Attick Pillaster
O Blocking Course

H. Roberts Esq.



The pedestal also has its *base* as well as the column, and the pilaster. The *base* of columns is differently formed in the different orders, but in general it is composed of certain spires or circles, and was thence in early times called the spire of a column. These circles were in this case supposed to represent the folds of a snake as it lies rolled up; but they are properly the representations of several larger and smaller rings or circles of iron, with which the trunks of trees which were the antient columns were surrounded, to prevent their bursting: these were rude and irregular, but the sculptor who imitated them in stone, found the way to make them elegant.

The *Tuscan base* consists only of a single torus, or round member upon the plinth: this is the most simple of all. The *Doric base* has a torus and an inverted cima in the *Coliseum*; the *Ionic base* has a single large torus, which is placed over two slender scotias, that are separated by two astragals. The *Corinthian base* has two torus's, two scotias, or hollow members, and two astragals. And the *Composite* has a double astragal in the middle. These several terms will be explained in their places: and in the mean time their form will be understood by their figures in the second plate. We have observed that the *Doric* had antiently no *base*; *Vitruvius* allows it none, and other antique buildings beside the *Parthenion* of *Athens* might be produced as instances. Even the *Ionic* in some very antient pieces has no *base*: so that we see what is done in this matter is very arbitrary, and has been introduced of later time than the period of many buildings of which we have remains; but this must not be considered as an improper deviation from the most antient manner, but as an improvement upon it; for a *base* is a very natural and very beautiful part of every order.

We have named the *base* appropriated by writers to each order, but there is beside these five, another called the *Attick* or the *Atticurgick base*, which excels them all in beauty; and was first given to the *Doric*, and since to almost every other column. This *base* consists of two torus's and a scotia; the two torus's are of different dimensions and the scotia runs between them. The *Ionic base* is unnatural, because it is smaller below than higher up, neither is that of the *Corinthian* without its faults: both are inferior by much to the *Attick*, which is therefore often with great judgment substituted in their place.

The antients seem to have given the same, or nearly the same projecture to the *base* in all the orders where we find it in their works. For instance, we see the same projecture in the *base* of the *Doric* and *Corinthian* order in the *Coliseum*, and in that of the *Ionic* in the temple of Concord; and the difference between the greatest projecture of any antique *base* we know, which is in the arch of *Titus*, and the least, which is in the *Corinthian* order in the *Coliseum*, is very trifling. See the figures of the several *bases* in *Plate II*.

BASILIC.

An antient palace. These were vast buildings consisting of a great hall, with isles, *Basilic*; porticos, tribunes, and tribunal, where the sovereigns in person administered justice. This is the proper and strict sense of the word which is Greek, βασιλική in that language signifying the same thing: but architects have taken the liberty to extend its meaning farther, and *basilic* is now used as a name of any spacious building, a hall, church, or the like. *Westminster* hall is properly in this sense a *basilic*, but the antients were more strict in the use of the word, and would not have called any thing but a royal palace by that name. Any large building for a court of justice and exchange, or the like, is also now called a *basilic*.

When *basilic* is used as the term for a church it is always understood to mean a great and elegant one.

N°. 1.

D

BOULTIN.

ENCH. I.

BOULTIN.

A name given by many to the moulding commonly called the egg, or quarter round.

BRANCHES.

A term used by some to express the arches of *Gothic* vaults.

CABLING.

The filling up the middle of a fluting in a column with something like a rope; hence the columns whose flutings are thus filled up are called columns with *cabled* flutings.

CANNELURES.

A term by which some, after the *French*, express the flutings of columns.

CAPITAL.

The head of a column or pilaster: terminating it at the top, as the base does at the bottom.

Every column consists of three parts, the base, the shaft, and the *capital*: the shaft is the body: under the base is placed the plinth or the pedestal, and over the *capital* is placed the entablature, consisting of architrave, freeze, and cornice: this is the general idea of a column, and is equally applicable to all the orders. See *Plate I*.

Capitals of columns and pilasters are divided into two general kinds; those of mouldings, and those with sculptures. The *Tuscan* and *Doric* are *capitals* consisting of mouldings, the *Ionic*, *Corinthian*, and *Composite* having leaves and other ornaments are those with sculptures.

The derivation of the word is from the Latin *caput*, or *capitellum*, a head of any thing.

The plan of the *capital* of a column, exclusive of its abacus, is round, and that of a *capital* of a pilaster is rectilinear.

The *capitals* differ in the several orders, and principally characterise them.

The *Tuscan capital* consists only of an abacus, or square piece at top; under this an ovolo, or quarter round; and under that a neck, terminated by an astragal, or fillet, which is understood to belong to the shaft of the column: this is its plainest and simplest form. *Vitruvius* gives it an astragal under the ovolo; *Scamozzi* allows no astragal there; and *Serlius* gives a fillet to the abacus, and gives room also for a fillet under the ovolo. In the *Trajan* column the *Tuscan capital* has no neck.

The *Doric capital* has its abacus, ovolo, and neck, as the *Tuscan*; but beside these, it has three annulets under the ovolo, and a cima, or an ogee, with its fillet, over the abacus. The abacus therefore is not the uppermost member in the *Doric capital*, which is very singular. This however is different from the oldest form of the *Doric*, for the architrave rests upon the abacus in the *Parthenion* at *Athens*, with nothing between.

Many put roses under the corners of the abacus, and upon the neck of the *capital* in this order.

The greatest writers vary much from one another on the *Doric capital*; it is remarkable that *Alberti* makes the whole near half as high again as *Vitruvius*, and alters greatly the proportions of its several parts.

The *Ionic capital* consists of three principal parts; an abacus composed of an ogee and fillet, a ring which forms the scrolls that so plainly distinguish this *capital*, and an ovolo, or quarter round and astragal at bottom.

This *capital* represents a vase covered with a piece of bark. The ovolo is the rim of the vase, on whose top the bark lies, and curls over, as having shrunk up in drying. The ovolo in this order is often adorned with eggs. The *Ionic capital* therefore has no neck.

OF ARCHITECTURE.

11

Chap. I.

The *Corinthian capital* exceeds the *Ionic* in elegance, as much as that excels the *Doric* or *Tuscan*. It consists of an abacus of a particular form, and a bell covered with leaves and stalks, the leaves forming its under part, and the stalks rising between them, and turning down in form of scrolls when they reach the abacus. The abacus in this order is hollowed circularly inward, and has a rose in the centre of each face. Instead of an ovolo and annulets there is here only the rim of a vase. The scrolls are sixteen in number, four in each face. In many buildings the corners of the abacus are cut off in this order, but they are sharp in the temple of *Vesta* at *Rome*, and in many other of the ancient edifices: there is also a great deal of variation in its height in different structures.

The *capital* in the *Composite* order is more ornamented than this; it is composed as it were of the two last, the *Ionic* being placed upon the *Corinthian*: and it also borrows from the others.

The *Composite capital* takes an ovolo from the *Doric*, an astragal under this, and volutes from the *Ionic*, and a double row of leaves from the *Corinthian*. It has a flower in the middle of the abacus, and leaves which return upwards under the horns; it has smaller stalks than the *Corinthian*, or, as others call them, only little flowers, lying close to the vase or bell, which twist round toward the middle of the face of the capital.

These are the distinctions of the *capitals* in the several orders, and by these, with the assistance of the figures at large in the second plate, they will become familiar to the eye of the student, when he sees them in buildings.

CASEMENT.

A name given by some workmen to the *scotia*, or hollow moulding between the two *Casement*, torus's in the base of columns. The same word in its common sense expresses the opening of a window; and in military architecture a vault of mason-work in that part of the flank of the bastion next the curtain.

CAULICOLE.

A term used to express the little twists or volutes that are under the flower in the *Corinthian capital*. They are supposed to be the twisted tops of the acanthus stalks, and are more properly called *belices*.

CARTOUCH.

An ornament representing a scroll of paper or parchment of whatsoever form. It is *Cartouch*, properly intended to contain an inscription, but the fancy of sculptors has extended it to other purposes of ornament, though its derivation from the *Italian cartaccio* ought to determine the use of it singly to an ornament intended to receive a motto or other writing. For this reason the *cartouch* is most natural when it is flat, but we see them raised and waved in a great variety of manners.

CARYATIDES.

Figures of captive women of *Carya*, dressed in the habit of their country, and serving *Caryatides*, instead of columns, to support the entablature in what is called the *Caryatic order*. See *Plate IV*.

CARYATIC ORDER.

One of the lesser, or as they are properly called by many, the false orders in building. In this the entablature is supported, as just observed, by figures of women, instead of columns. Different as this is from the general simplicity and plainness of the antients, we see it introduced in many of their buildings. The temple of *Erichtheus* at *Athens*, affords a very beautiful instance. The term is derived from the name of captive women of *Carya*, who when thus represented are called *Caryatides*; as this is the *Caryatic order*.

C A -

A term expressing a hollow moulding, containing a quarter of a circle.

We have mentioned occasionally what is called an ovolo or quarter round, and shall explain it at large in its place. The *cavetto* has just the contrary effect to the ovolo. Its principal use is in cornices; it is derived from the Latin *cavus*, which signifies hollow. See *Plate III.*

Called also *cimafium*. A moulding very common in ornaments, and called by our workmen *cima resla*. It has its names *cima* and *cimafium*, which should be written *cymafium* from the Greek name *κυμαριον*, which literally signifies *a wave*, and has been transferred to this moulding from its figure. The *cymafium* represents in some measure a wave; it is hollow at the top, and swelling at the bottom, so that its out-line has a waved appearance: it is generally the uppermost member in large cornices. There may be said to be two kinds of *cymafiums*, in one the part that has the greatest projecture is hollow, and is termed *double*; this our workmen call an ogee; in the other the swelling part has the greatest projecture, and this they call the ogee reversed, and sometimes the heel. The beauty of this moulding consists in its having the projecture equal to the height. See *Plate III.*

A ring, list, or fillet, at the top and bottom of a column, serving to divide the shaft at one end from the base, and at the other from the capital. It represents one of those rings of iron which the ancients put round the tops and bottoms of their columns, when made of trunks of trees, to prevent their splitting.

The proper sense of this term is a statue at least twice as big as life, usually much larger. The *colossus* of the sun at *Rhodes* was famous, and there are in the court of the capitol at *Rome* remains of statues of *Nero* and *Commodus* of that character. Hence we call a building a *colossus* which is a great deal larger than the common size. The amphitheatres of the ancients, and the pyramids in *Egypt* are of this kind. These are more properly called *colossal* buildings than *colossus's*, that term being appropriated in a manner to statues, when used distinctly in the word: but it may be equally applied to any thing extraordinarily great, or in the same sense as we would use *gigantic*.

A member in architecture, of a round form, consisting of a base, a shaft or body, and a capital. It differs from the pilaster, which is square. The word is derived from the Latin *columna*, which signifies the same thing. The *column* supports the entablature. The original *columns*, as before observed, were trunks of trees, girt round at the top and bottom with iron hoops and rings to prevent their splitting: from these needful parts sculpture has made the bases and capitals of the plainer orders, and upon these, fancy and a licentious freedom have indulged in those which are called the finer and more delicate.

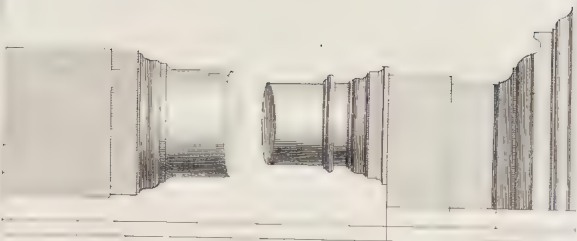
Columns should be round, for they represent those trunks of trees which were the first supports of buildings; and for the same reason they should have a diminution upwards. They are rash who say nature makes nothing square, for the stalks of many plants are so, and are very beautiful in that form; but nature has not made the trunk of any tree square, nor all the way of the same thickness. The *Gothick* pillars therefore are wrong, which are all the way of one diameter, and the *Greek* and *Roman* are rational which diminish in the upper part.

The *column* must stand perpendicular, because that is the posture in which it will bear most, and it should be detached from the wall, else it loses much of its beauty.

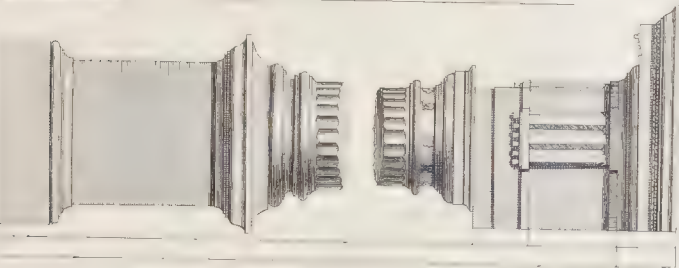
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The Five Orders of ARCHITECTURE with their PEDESTALS.

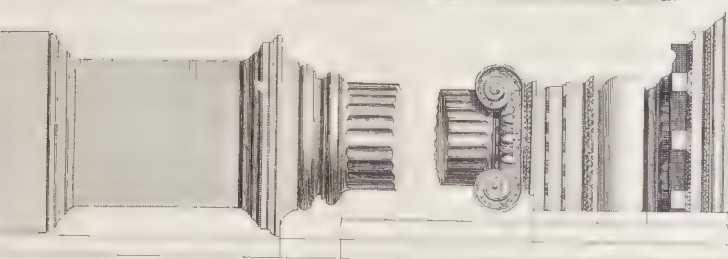
TRUSCAN.



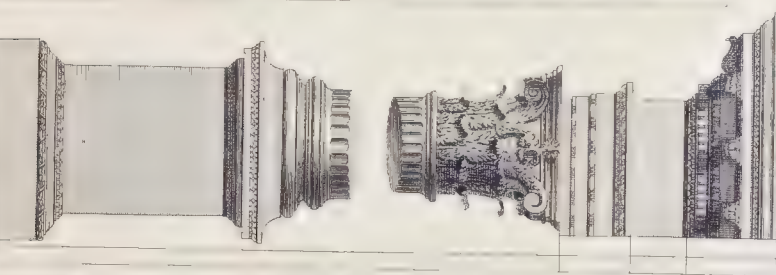
DORIC.



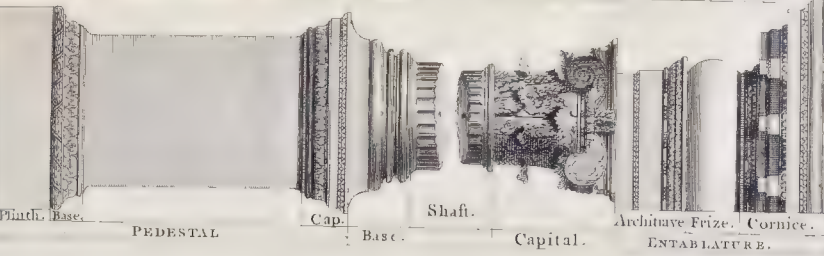
IONIC.



CORINTHIAN.



COMPOSITE.



Mould. Base.

PEDESTAL

Cap.

Base.

Shaft.

Capital.

Architrave Frize. Cornice.

ENTABLATURE.

OF ARCHITECTURE.

13

When *columns* must be worked in walls, the less the better; there should never be above a fourth part of their diameter hid. *Columns* look best of all in porticos, because they are there always free: they should be reserved for such purposes, and pilasters used where they must go into the wall. On all other occasions pilasters are greatly inferior to *columns*. As to rustic *columns* they have more of fancy than beauty.

Chap. I.

We find in the oldest buildings no pedestals allowed to *columns*. In the *Doric* temple to *Minerva* at *Athens*, the *columns* have not so much as a base; on the contrary we see them in some modern works hoisted upon double pedestals, one on another.

COMPOSED ORDER.

This term occurs in some writers, and is imagined by the generality of readers to mean the same thing with the *Composite*. The sense of the word is in reality the same, but custom has made them express what is different. The *Composite* order is, as we shall shew, one thing, a *composed order* is capable of great and endless variety; it comprehends any composition made at the pleasure of the architect, whose ornaments are extraordinary and unusual, but have somewhat of beauty. We see a great deal of this workmanship in buildings, but it were well if there were somewhat less of it; for 'tis often very faulty.

COMPOSITE.

One of the five orders of architecture. It has this name from its being compounded of two or more of the others: the Latin word *compositus*, from which it is derived, signifying *compounded*, or *made up of others*. The *Corinthian* is indeed by *Vitruvius* said to be composed of the *Doric* and *Ionic*, but the traces in that are not so plain as those of the *Corinthian* and *Ionic* are in this *Composite*.

The *Composite*, like all the other orders, consists of a base, shaft, capital, and entablature.

The *Corinthian* base is used for the *Composite* order often, and sometimes the *Attick*.

Vignola gives the *Composite* a distinct base, which differs from the *Corinthian* in that it has only one astragal between the two scotias, the other being between the great torus, and first scotia: but this is not much used. The shaft is the same with that of the *Corinthian* to be described in its place, only that it is half a diameter higher. The capital has been described already under the article CAPITAL, as composed of the *Ionic* upon the *Corinthian*. In the entablature the architrave has two faces, with an ogee between, the freeze has nothing particular, and the cornice has simple modillions and consists of fourteen members, and the corona and modillions are massy. Often the *Corinthian* entablature unaltered is put upon the *Composite* column: we have an antient instance of this in the arch of *Titus*, but it has also, as we see; an entablature of its own. See Plate II.

The height of the *Composite* column is a subject on which architects differ; some making it the same with the *Corinthian*, others somewhat more, others less; and placing it under the *Corinthian* as more massy, allowing that to be the most delicate of all: and indeed this is very reasonable, for the *Corinthian* capital has an aspect of more lightness than the *Composite*.

CONCAVE MEMBER.

A name by which some call the *scotia*, a hollow moulding between the torus at the base of columns.

Concave
Member.

CONGE.

The name of a moulding, of which there are two kinds, the one swelling, the other hollow. The swelling *conge* is what we more commonly call the quarter round, the hollow is the cavetto.

A COMPLETE BODY

CONSOLE.

Console. An ornament cut upon the key of an arch, and having a projecture or jetting out in such manner that is capable of supporting a bust or other figure. The word is French, and comes from *consolider*; to close up, *Vitruvius* calls these ornaments *ancones*: being inverted they make modillions.

CONTOUR.

Contour. The line which bounds and terminates a figure, or its parts: the out-line of a figure.

CORBEL.

Corbel. Or as some write it *corbelle*, a carved ornament, representing a basket full of fruits and flowers, used to finish some elegant part of a building, as to place on a column, or on the heads of the *caryatides*. This word is also used to express the bell or vase of the *Corinthian* capital, from its being supposed to have originally been designed from a basket covered with a tile, and surrounded by leaves of the *acanthus*.

CORINTHIAN.

Corinthian. The name of one of the five orders of architecture; the most light and elegant of them all. The *Composite* has been intended as an improvement upon it in point of elegance, but the capital in that order is heavier than in the *Corinthian*, and therefore those seem to act very reasonably who give its column a less height than the *Corinthian*, leaving that, as we have named it, the lightest of all the orders.

The *Corinthian* is one of the three antient orders of the *Greeks*, and is the highest pitch to which they carried architecture in point of elegance. They began with the *Doric*, they rose to the *Ionic*, and lastly, they added the *Corinthian*, whose capital was formed, as has been before observed, upon the idea of a plant of *acanthus* growing about a basket, and as this appeared very light and elegant, they gave a height and lightness to the column.

The base of the *Corinthian* column consists of a torus set upon a plinth, a scotia, two astragals, another scotia, and then an upper torus. The column has nine diameters and an half in height, the capital is composed of leaves and stalks of the *acanthus*, which last, turning in spires under the abacus, make a number of small volutes. The architrave consists of three faces, the freeze is usually decorated with sculptures, and the cornice has modillions, and is in most places beautifully decorated with sculpture.

The *Corinthian* is the order to which recourse is usually had for giving the utmost elegance to a building. It is remarkable that the ruins of *Palmyra* are all *Corinthian*, except two *Ionic* half columns.

CORNICHE.

Cornice. A projection consisting of several members, which crowns or finishes the body or part to which it is annexed. It is derived from the Latin *corona*, a crown. The *cornice* is a regular part of the entablature of every order, and it differs in them all.

In the *Tuscan* it is the most plain and simple, and is distinguished by having no ornaments; in the *Doric* it has drops, or bells, in the soffit; in the *Ionic* it has plain modillions; in the *Corinthian* it is extremely rich, and has modillions; and in the *Composite* there are also simple modillions. The mouldings are carved, and there are channells under the soffit. These marks will distinguish them to the eye of the young student by the assistance of the figures in plate II.

The

The *cornice* is used for the crowning of pedestals, where it is called the *cap*, as Chap. I. well as columns and pilasters, and in many other parts of building, as will be shewn in the course of this work under the proper heads.

CORONA or CORONIS.

These terms are sometimes used to signify a cornice, but wrongly: they express any crowning or finishing of a work, at the top, of whatever kind that be, as a pediment, or the like; but as the *cornice* has a peculiar name, something like these words, and derived from them, it should always be used in that sense.

Corona is also sometimes used to express particularly that flat square and massy member of a cornice which is more usually and distinctively called the *drip*, or *larmier*. This is placed between the cymatium and the ovolo, and its use is to carry off the water drop by drop from the building.

CORSA.

A name by which *Vitruvius* calls a flatband, a square fascia with more height than projecture.

DENTELS.

Ornaments in a cornice, in some degree resembling teeth, whence they have their *Dentels*; name; *dens*, and in the plural *dentes*, in Latin, signifying teeth.

Dentels are often employed in the entablature of the *Ionic* order; they are cut upon a little square member, and have the appearance of a row of teeth; some call this member the *denticulus*, and the *dentells*, *dentes*, or teeth; others use *denticle* for the *dentells*. They are in general indifferently called *dentells*, *dentils*, and *dentiles*. See Plate II.

The breadth of the *dentill* should be half its height, and the interval or interdentation two thirds of the breadth; this is the proportion allotted by *Vitruvius*.

Antiently *dentills* were used only in the *Ionic* cornice, but they have since been introduced into others; the Greeks never put them under modillions, but later architects have not been so strict in this respect, though both reason and elegance recommend it.

DIASTYLE.

The term by which the old architects expressed that intercolumniation, or space between columns, which consisted of three diameters, of the column; others call this a space equal to four diameters. The word does not determine any thing by its derivation, which is only from the Greek *δια*, *between*, and *στυλος*, *a column*; so that it may express one distance between as well as another.

DIE.

A term used to express a squared naked piece. Thus the body of a pedestal, which is that part between its base and its cap, is called the *die* of the pedestal.

DIE of a capital.

A name by which some call the *abacus*.

Die of a capital.

DIMINUTION.

A term expressing the decrease in thickness in a regular column. In *Gothic* buildings we see pillars of an enormous height in proportion to their thickness, and all the way up of the same diameter; in regular building the column diminishes in the upper part, and it is natural that it should do so, for the first columns were parts of trunks of trees, and they must have from nature this *diminution*, which the antients had the judgment to preserve in the shape of their artificial columns.

The

The *diminution* generally begins from one third of the height of the column : some make it begin from the very base, so that the column is smaller all the way up ; but the first is the general and the best method ; this other has not nearly so good an effect.

The *diminution* in the *Tuscan* order is usually the greatest of all ; it is commonly made a fourth part of the diameter of the column at the base : but antient buildings do not warrant this : in the *Trajan* column the *diminution* is but one ninth of the diameter.

The *diminutions* are very differently proportioned in columns of the same order in different antique remains ; and *Vitruvius* would have this contraction in thickness proportioned to the absolute height of the column, rather than to the consideration of any particular order : if a column be fifteen foot high, he directs the *diminution* to be one sixth of the diameter ; and if it be fifty foot, he would have it only one eighth : but the practice of the antique as well as later architects differs extremely upon this head ; scarce any thing is so far from being determined.

DIPTERE.

Diptere.

A term used by the antients to express a temple encompassed with a double row of columns ; it is derived from the Greek *διπτερος*, formed of *δις*, twice, and *πτερος*, a wing, and expresses a building with two wings. When a building was encompassed with a single instead of a double row of columns, it was called the *pseudo diptere*, or *false diptere* ; the two rows formed a kind of porticos, which they called wings.

DORIC.

Doric.

The name of one of the five orders in architecture ; it is one of the three antient orders of the Greeks. It is usually placed upon the *Attick* base. The whole height is seven and an half or eight diameters ; and its capital is plain, being formed only of mouldings ; in the entablature the frieze is enriched with figures called triglyphs, to be explained under that head ; the spaces between these are called metopes, and may be either left plain or decorated ; and its cornice has drops.

The *Doric* is the oldest of all the orders, and originally had no base : it is the most natural and best proportioned of them all. The first building in which this order was used was a temple at *Argos*, built to *Juno*, by *Dorus* a king of *Achaia*, from whom the order was afterwards named.

It has been much enriched and embellished since its invention, so that what is called *Tuscan*, comes in many things nearer the antient *Doric*, than the order called by that name at this time. The antient *Doric* is seen in great plainness in the remains of the *Parthenion* at *Athens*, and in the theatre of *Marcellus* at *Rome*. It is used at this time principally in strong buildings, gates, citadels, the lower part of churches, and the like, in which places strength is more proper than elegance. The gate of *Burlington* house in *Piccadilly* is of the *Doric* order.

The triglyphs are supposed to be inseparable from this order ; but we find them frequently omitted for the sake of cheapness in ordinary works ; and there may be a reason sometimes for leaving them out, and making the frieze plain even in the most finished and elegant buildings.

ECHINUS.

Echinus.

A term used sometimes to express the ovolo, or quarter-round, and sometimes for a part of the figures with which that member is usually carved. This last is the more proper and strict sense, and in the same manner ovolo, though usually employed as the name of the whole member, is more strictly expressive only of a part of its carving.

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The quarter-round is usually carved with what are called eggs and anchors; the eggs are the part from which this has been called ovolo; *ovum* being Latin for an egg: these eggs have a kind of shell about them beside their own, at a distance from their surface, and separating them from the anchors between; this is called the *echinus*. *Echinos* being the name of the husk or shell of a chefnut, which it was meant to resemble.

Echinus therefore is properly the name of the shell in the carving of the ovolo, or quarter-round, and it is improperly used for that whole member. See *Plate III*.

ENCARPUS.

A term by which some have called the representation of a festoon, on freezes, and otherwise, as an ornament in buildings; *Vitruvius* calls it by this name. These festoons were composed of fruits, flowers, and leaves, and *encarpus* expresses them best when composed of fruits, *καρπος* being Greek for fruit.

ENTABLATURE.

The ornament supported by the capital on the top of a column or pilaster. Every column consists of its base, shaft, and capital, and supports an *entablature*; these together constitute the entire body, or order; and the *entablature*, like the capital, differs in every order.

The *entablature* consists of three parts, the architrave, freeze, and cornice: the architrave is composed of one or more faces, and rests upon the capital; the freeze comes next, and is the middle part of the *entablature*, the cornice is the top, or uppermost.

In the *Tuscan* order the *entablature* is plain; in the *Doric* the freeze is decorated with triglyphs, or channelled figures; in the *Ionic* and other richer orders, the cornice is decorated with dentells, modillions, and a variety of ornaments.

The *entablature*, according to *Palladio*, should be a fifth of the height of the column, and this equally in all the orders, except the *Tuscan*, in which it is a fourth. Its parts are separately explained under the articles of architrave, freeze, and cornice.

EUSTYLE.

A term by which the antients expressed the best and most elegant manner of placing columns, with respect to distance, or intercolumniation. The word is derived from the Greek, *eus* signifying *well*, and *στυλος*, a column. *Vitruvius* says the *eustyle* intercolumniation, or best distance of placing columns, is that of four semidiameters and a half, that is two diameters and a quarter of the column. He says this manner of placing columns exceeds all others in strength and convenience, as well as beauty.

FACADE.

The face or front of any considerable building to a street, court, garden, or other place.

FASCIA.

A term used to express a flat member in the entablatures of columns, or elsewhere, resembling a band or broad fillet. Our workmen call it a *face* or *facio*, and it is sometimes written *facia*. The architrave, in the more elegant orders, is composed of three parts, or divided into three bands one over another; these are called the *fasciæ* of the architrave: the *Tuscan* should properly have one *fascia*, nor had the *Doric* originally any more. But the architects have taken the liberty of deviating from exactness in this, as in many other respects.

N°. 2.

F

FASTIGIUM.

Book I.

FASTIGIUM.

Fastigium. The name given by *Vitruvius* to what we call a *pediment*.

FESTOON.

Festoon. An ornament of carved work, representing a wreath, or garland of flowers or leaves, or both together, twisted or interwoven one with another; the *festoos* is naturally thickest in the middle, small at each end, and tied up there, whence a part commonly hangs down beyond the knot.

The antient use of the *festoos* was to hang upon the gates of temples at festivals, and it consisted of flowers, or fruits, and their leaves only; but we have, of later time, deviated so far from truth and nature, that we have twisted instruments of music, war, and emblems of the arts and professions of all kinds, into this form. The antients would have exclaimed at a garland of drums and fiddles, or a wreath of cannons and battle-axes, but we overlook these absurdities. The word is French, but it is derived from the Latin *festum*, feast, or festivity.

Festoos are hung upon arches, and in the freeze of entablatures, sometimes also about vases, and other ornaments.

FILLET.

Fillet. A little square member which is placed at the top or bottom of a larger.

FLUTINGS.

Flutings. Those hollows or channellings which are carried perpendicularly up columns by way of ornament. They are cut lengthwise all round the shaft of the column, and are usually rounded at the ends. *Vitruvius* says they were first intended to represent the folding of a garment.

The *flutings* of columns properly differ according to the several orders; in the *Doric* they should be twenty to each column; in the *Ionic* twenty-four, and so on; but the present architects do not very strictly adhere to these rules.

The *flutings* of columns are sometimes left open, and sometimes there is carried up a rounded body like a rope, plain or twisted all along their middle. They are, in this condition said by some to be cabled, and the columns are called cable-fluted columns.

FREEZE.

Freeze. A member in the entablature of columns: it is the middle part, and separates the architrave and cornice. The *freeze* is flat in all the orders; but in most of them is intended to receive ornament. In the *Tuscan* it should remain plain; in the *Doric* it is essentially divided into two parts, under the names of triglyphs and metopes; the triglyphs are channelled figures, and the metopes are the spaces between them; these triglyphs are not capable of alteration, but the ornaments in the metopes are varied at pleasure, and frequently they are left plain. In the *Ionic* the *freeze* is sometimes made to swell, which is an objection to the general rule of their being flat, but this is an innovation: in the *Corinthian* and *Composite* the *freeze* is decorated variously at the pleasure of the architect, with figures of any kind, and is often a very elegant part of the order. The *freezes* of the *Corinthian* order at *Palmyra* are very richly decorated. In our common door-ways for persons of business, where there is an attempt toward any order, the *freeze* is the part which receives the name, or other inscription.

In the *Corinthian* and *Composite* orders the *freeze* is often joined to the architrave by a sweep: the height of the *freeze* is in general three fourths of that of the architrave, but not strictly or exactly. When it swells, as in the *Ionic* order, it is called a pulvinated or cushioned *freeze*.

Some

Some write the word *frize* and others *phrize*; this last spelling brings it nearer Chap. I.
what is pretended by many to be its origin, the word *phrygio*, an embroiderer; the
ornaments of *freezes*, in the richer orders, representing embroidery.

When the *freeze* is decorated with sculptures, it is frequently named according to
their nature; thus historical *freezes* are those representing histories by figures, ma-
rine *freezes* are those with shells, tridents, and sea-horses, and so of the others;
but the most frequent in antient buildings are those on which religious ceremonies,
the instruments of sacrifice, and other such matters are figured.

We see instances very common in small buildings, in which the architect has taken
the liberty to retrench the *freeze* entirely, and to make the cornice rest upon the
architrave; but this always offends the eye, and is extremely wrong. The *freeze*
is introduced into an entablature to shew a natural space, and the thing which re-
presents it cannot be suppressed without impropriety.

FRENCH ORDER.

An order, as we are content to call it, in which the proportions are the same as in the French Order.
Corinthian, but the capital is decorated with cocks heads, and flower de lices.

There are some columns of it in the grand gallery at *Verfailles*, but such a variation
from the antique does not deserve the name of a distinct order.

FRONTISPIECE.

The word is sometimes used to express the whole decoration of the front of a church; Frontispiece.
sometimes for a particular compartment raised over gateways, and in other places,
supported and encompassed with figures, or other ornaments, and intended to hold
an emblem, a coat of arms, or inscription.

FRONTON.

The term used by those who follow the French authors for what we call a *pediment*, Fronton.

An ornament that crowns the frontispieces of buildings, and is used over doors and
windows. It is properly of a triangular form, and not very high in proportion to
the extent of its base, but the architects have deviated from this, and made it arched,
and often broken, to admit busts or figures.

FUST.

A word used by some to express the shaft of a column; that part which is contained Fust.
between the base and the capital, and may be called the trunk or body of the co-
lumn. This part is commonly plain, sometimes fluted; and the flutings are some-
times empty, sometimes filled up at the bottom, with a strait, round, or twisted
piece, which is called a cable. Sometimes also the *fust* is ornamented with rustick,
or otherwise.

GIGANTICK ORDER.

A name given by *Scamozzi* and others to the *Tuscan* order.

Gigantick
Order.

GLYPHS.

The name of the channels, or perpendicular hollows, cut in the triglyphs of the *Doric* Glyphs.
freeze.

GOLA, or GULA.

A name given by many to the moulding called more commonly an *ogee*.

Gola or Gula.

GORGE.

The name of a cavaetto, or hollow moulding resembling the *scotia*, but not so deep.

Gorge.

GOTHICK.

A wild and irregular manner of building, that took place of the regular antique me- Gothick.
thod at the time when architecture, with the other arts, declined. The *Gothick* is
distin-

A COMPLETE BODY

distinguished from the antique architecture, by its ornaments being whimsical, and its profiles incorrect. The inventors of it probably thought they exceeded the *Grecian* method, and some of late have seemed, by their fondness for *Gotbick* edifices, to be of the same opinion; but this was but a caprice, and, to the credit of our taste, is going out of fashion again as hastily as it came in.

To do justice to the architects of the middle period, we are to distinguish the *Gotbick* into two kinds, and these, according to their origin, may be called antient and modern. The antient *Gotbick* is solid, massy, and heavy; always very strong, and often sufficiently pompous. This was the *Gotbick* brought by the Goths into *Germany* in the fifth century: the modern *Gotbick* has been invented as an improvement upon this, but has, in reality, deviated from its character; it is light, fantastical, and covered with a variety of ornaments, but these frequently useless and impertinent. The antient *Gotbic*, in its original, was too coarse; the modern soon became too full of imaginary elegance. It continued universally in esteem till the sixteenth century.

In the antient architecture, no ornament was admitted but what had its origin in something necessary or useful, and contributed to the beauty of the whole. In the *Gotbick* the ornaments are fanciful, and have no respect to the parts or whole of the building: in the antient all was proportioned, and therefore it was strong and appeared so; in the *Gotbick* we see columns of twenty diameters high, which, though strong enough in reality, threaten ruin by seeming weak. Their columns of this height are all the way of the same thickness. There is no kind of building in which the *Gotbick* does so well as in churches; most of our cathedrals are of this taste, and in the finer of them we find an air of majesty and grandeur which strikes and affects us, in spite of that profusion of ornaments which so immoderately disfigures them. The plain and the natural is wanting, while we are overpowered with the delicate and nice: but the error of the late taste has been in attempting to bring the *Gotbick* into use in smaller buildings, in which it can never look well. In a *Gotbick* cathedral we see many defects, but at the same time we see something very great: but in these little buildings in that style, we see the defects without the greatness.

GULA.

Gula. A name given by some to the moulding commonly called an *ogee*.

HELIX.

Helix. A term used to express the little curling stalk under the flower in the *Corinthian* capital; this is a kind of little volute, and approaches to the form of that in the *Ionic* capital, though of a different original; this, in the *Corinthian*, is intended to represent a stalk of the acanthus, bent and twisted down, and that in the *Ionic* the bark of a tree. These *helices* of the *Corinthian* however give it some distant resemblance of the *Ionic*, though when examined they are found to be smaller and more numerous. The word comes from the Greek *ἐλῆξ*, which originally expresses a twisted stalk of ivy, but from thence is made to represent any thing that is twisted or spiral.

HERCULEAN ORDER.

Herculean
Order.

A name given by *Scammozzi* to the *Doric* order.

HEROIC ORDER.

Heroic
Order.

A name by which *Scammozzi* has called the *Composite* order.

OF ARCHITECTURE.

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HIPPODROME.

A kind of building erected by the antients for the exercise and sportings of their horses. It was spacious, of a long form, circular at the two ends, and encompassed with porticos. The same word is sometimes also used to express the place where they ran their races. It comes from the Greek *ἵππος*, a horse, and *δρομος*, a course.

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114 p. 1000 e.

HIPS.

The pieces of timber which are placed at the quoins of a roof.

Hips.

IMPOST.

A term used to express a fascia, or a small cornice which crowns a pier, or pilaster, and supports the first stone from whence an arch springs. The word is Italian, *imposto* signifying surcharged.

Sometimes the entablature of the order serves for the *impost* of an arch, and this has a fine appearance.

INSULATED.

Detached from any other building. A church is *insulated* when it stands contiguous to no other edifice, and so of any other building. The word comes from the Latin *insula*, an island, these buildings being separate from others as islands are from the continent, or nearest main land. A column that stands alone, and free from any wall, is called an *insulated* column. The columns of the *Periptere* temples of the antients were *insulated*: the Monument in London is an *insulated* column.

Insulated.

IONIC ORDER.

One of the three original orders of the Greeks, of a middle nature between the *Doric* which was their plainest, and the *Corinthian* which was their most ornamented. It is also the middle order of the five, taking in the two added by the Romans, the *Tuscan* and *Doric* being stronger, the *Corinthian* and *Composite* more ornamented. See Plate II.

Ionic Order.

The base of the *Ionic* consists of a torus and two cavettos, with astragals between them. *Vitruvius* was the inventor of this base, which is liable to censure because smaller, and consequently weaker in the lower than the upper part. The antients, when they gave a base to this order, used the *Attic*: often they gave it none. Many give the *Ionic* the *Corinthian* base; but this, though better than its own, is not so well as the *Attic*.

The shaft is eighteen semidiameters, or nine diameters, in height; in some of the antient buildings it has but sixteen semidiameters, which is the present proportion of the *Doric*; but the *Doric* was then lower: when they gave the *Doric* sixteen, they raised the *Ionic* to eighteen, to preserve the distinction.

When the shaft of the *Ionic* is fluted, the flutings should be twenty-four; and they are often filled up with a cable or baton for one third of the height, and the rest of their space left empty. Some make the flutings of the *Ionic* order thirty, in which they have the authority of *Vitruvius* to support them. In these things architects take great liberties: the only fluted *Ionic* column we know of among the remains of the antique in Rome, is that in the temple of *Fortuna virilis*, and the flutings there are only twenty.

The capital in the *Ionic* order consists of three parts, an abacus, a rind which is the hollow of the volute, and an ovolo under which is an astragal. The abacus supports the entablature, the rind produces the scrolls or volutes, which are the great characteristic of this order, and the ovolo is frequently carved.

N°. 2.

G

The

The *Ionic* entablature has its architrave divided into faces; its freeze is often made to swell, but this is not found in the most antient buildings; and the cornice has simple modillions.

The *Ionic* is an order that stands as a medium between the strong and rich. It is said the famous temple of *Diana* at *Ephesus* was of this order; at present it is much used in churches; and, when justly executed, has a very beautiful effect.

INTERCOLUMNIATION.

Intercolum-
niation.

A term used to express the spaces between columns, or the distances at which they are to be placed from one another. This is not arbitrary, but established by rule, as strictly as any thing in the science; but there is some variation allowed according to the nature of the building.

In the *Doric* order the particular division of the freeze into triglyphs and metopes, makes it necessary to regulate the *intercolumniation* according to their distribution. In the other orders it is of five kinds, distinguished by the names of *pycnostyle*, *sylistyle*, *eustyle*, *diastyle*, and *areostyle*.

In the *pycnostyle* *intercolumniation* the distance does not exceed a diameter and an half. In the *sylistyle* it is four semidiameters, or two diameters of the bottom of the column. In the *eustyle*, as already observed, it is four semidiameters and an half, or two diameters and a quarter; and this is supposed the best and most beautiful distance. In the *diastyle* it is three diameters, and, according to some, four: and in the *areostyle* it is properly four diameters. This is the largest space, and this *Vitruvius* gives as the measure of the *areostyle*. Therefore those which give this to the *diastyle* create confusion.

The *intercolumniation* is usually made smaller as the orders are more delicate, and larger as they are of the stronger kinds.

ITALIAN ORDER.

Italian Order.

A name by which many have called the *Composite* order. See *Plate II*.

LACUNAR.

Lacunar.

The antient name for what we call a *seffit*, when it consisted only of compartments, sunk or hollowed, without the division of platbands, or spaces between the several pannells. But when they were added it was called *laquear*.

LARMIER.

Larmier.

A large square flat and massy member of a cornice, placed between the cymatium and the ovolo, and called also the *corona*. Its use is to disperse the water, and cause it to fall at a distance from the wall drop by drop. It has its name *larmier* hence, *larme* being French for a *tear*. See *Plate III*.

LAQUEAR.

Laquear.

The antient term for what we express by the Italian word *seffit*, a ceiling divided into compartments, and those ornamented with platbands. Where there were the hollow compartments only, they called it *lacunar*, from *lacus*, a hollow place, but when there were these other ornaments they called it *laquear*, from the rows of the platbands resembling nooses, *laquei*.

LEAVES.

Leaves.

Ornaments of carving, given to the entablatures of the orders, See *Plate II*. and other parts of decorated buildings: they are either twisted into festoons, or spread irregularly over a freeze, or other part. The antients used two kinds of *leaves*, the one natural, the other imaginary; among the natural were those of the lawrel, palm, acanthus, and olive: but they took such liberties in the forms of these, that they

might be called in a great measure imaginary too. The introducing imaginary *leaves* reflected upon their taste, for it was an insult upon nature; and, in this very unpardonable, that nothing the art of the greatest sculptor can invent in this way will ever come up to what is afforded by nature: the variety of *leaves* being endless, and their forms, in innumerable instances, in the highest degree, elegant. We see a great deal of this imaginary foliage in the *Gothick* ornaments, without wonder, because all there was professedly left to fancy; but it is with concern and astonishment we meet with it in the *antique*.

LINTELL.

A piece of timber that lies horizontally over doors and windows.

Lintell.

LIST, or LISTELL.

A little square member serving to crown, or to accompany a larger; or sometimes to lift or listell, divide the flutings of a column. The word comes from the Italian *listello*, signifying a little girdle, or band; it is called also the *fillet*, and by some a *square*. See its figure *Plate III*.

MATRONAL ORDER.

A name by which *Scamozzi* has expressed the *Ionian* order. See *Plate II*.

Matronal Order.

METOPES.

A name given to the square spaces between the triglyphs of the *Doric* freeze. *Metopes*. See *Plate II*. We have observed before that the *Doric* freeze is ornamented with triglyphs, or channelled figures, these are placed at certain distances one from another; and the spaces between one and another of them are the *metopes*. The distance at which the triglyphs regularly stand, makes these square. They are sometimes left naked; but they were adorned among the antients with parts of beasts, instruments of sacrifice, and other figures; and they have in general something placed upon them in the modern works of elegance, according to the fancy of the architect.

The antient use of the *Doric* was in temples, and some would restrain it to them at this time, because of the difficulty there is of managing a freeze thus necessarily divided in common buildings.

When there is a space less than the proper *metope*, as at the corner of the *Doric* freeze, it is called a *semi-metope*, or *demi-metope*.

MEZANINE.

A kind of little story, called also an *entresole*; it is placed between two principal stories, and serves for apartments for upper servants.

MINUTE.

Architects express by this term a thirtieth part of a semidiameter of a column, that is, a *Minute*, sixtieth part of a diameter; and sometimes, speaking of weights, the twelfth part of an ounce.

MODERN.

Architects distinguish buildings of former ages into three classes, antique, antient, and Modern. *modern*: the two first terms are exactly the same in their original sense, but they appropriate them to different meanings. *Antique* signifies a remain that was executed when the arts were in their greatest purity and perfection; and *antient* an old piece of work, but not of that perfect truth. The word *modern* is used as distinguished from both these, but its sense is not well fixed: some mean, by *modern* structures, those *Gothick* buildings which are so common at this time, and, though built long since, are *modern* in comparison of the remains just named; others, by *modern* buildings,

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ings, mean the *Italian* method, but that is only the antique revived. Others exprefs by this term, the new whimsical ftructions, which have fo much of fancy, and fo little judgment or tafte, that they deferve no name at all. It is a reflection upon our country to call thefe *modern*, as if the general tafte were as much depraved as that of the few particular people who erect thofe baubles.

MODILLIONS.

Modillions. Ornaments in the entablatures of the richer orders. See *Plate III.* They are little brackets, or confoles; and their place in the entablature is under the foffit, or bottom of the drip. They ought to be fo placed that one always may be over the middle of the columns.

Thefe *modillions* are moft of all ufed in the *Corinthian* order, in which they are enriched with carvings: in the *Ionic* and *Composite* they are more fimple. And in the other orders they are not properly ufed at all. The word is *Italian*, with a different fpelling; *modiglioni* fignifying the fame thing.

They feem to be introduced as fupports, but are nothing more than ornaments. Their form is commonly that of the letter S, and fitted to the foffit of the cornice.

The word *mutule* was originally ufed in common with *modillion*, as fignifying in every refpect the fame thing; but at this time it is confined to the *Doric* order. The *mutules* in the *Doric* always anfwer to the triglyphs.

MODULE.

Module. A term ufed to exprefs a meafure taken at pleafure, by which to meafure a building, or part of a building. The *module* does not properly confift of any number of inches, or parts of an inch, but is ufually a certain part or proportion of the diameter of a column, in its bottom or thickeft part. What is ufually underftood by the term is the diameter; or in the *Doric* half the diameter of the column: thus, in fpeaking of the fpaces between columns, we fay they are fix *modules*, or eight *modules*, the meaning of which is, they are three diameters, or four diameters. The *module* is afterwards divided into a certain number of parts, and thefe are commonly called minutes; the common way is to divide the *modules* into thirty parts, or minutes; then every minute is a fixtieth part of the diameter of a column. This ferves very happily for the meafuring the feveral parts in the orders.

MOULDINGS.

Mouldings. Certain projectures on walls, columns, and other parts of buildings. The term comprehends all thofe parts which jet out beyond the bare or naked face of a wall, or column, and they ferve only for ornament; whether they be fquare, round, or curved.

The moft confiderable of the mouldings in ufe are fhewn in the *Ionic* entablature, *Plate III.* and in the *Attick* bafe of that column; they are, 1. The liftell. 2. The cimafium. 3. The cima reverfa, commonly called an ogee. 4. The corona, drip, or planchiere. 5. The modillion, with its ogee. 6. The Ovolo. 7. The Cavetto. 8. The upper and under torus. 9. The fectia, or large cavetto, between them.

A *doucine* is the cymatium; or that in which the hollow part has the greateft projecture; the *talon* is the ogee, in which the fwelling part has the greateft projection. The *ovolo* is a quarter round fwelling. The *cavetto* is a quarter round, hollowed; the *aftragal* is fmall and round and has ufually its fillet; the *dentell* reprefents teeth: the *plinth* is a plain fquared furface, whofe ufe is generally to fupport the bafe of a column.

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THE reader is desired to observe, That (although we have in our third plate, *explaining the mouldings of the Ionic entablature*, given, for the sake of the practical builder, the proportions of the architrave, freeze, and cornice, in round numbers) we have added also the minutes which contain the more exact division. These minutes are put to all the members exactly as given by *Andrea Palladio*, who directs, in the same chapter, that the entablature should be divided into twelve parts, four of which he gives to the architrave, three to the freeze, and five to the cornice, which proportion differs a little from the measure by minutes falling short in the whole entablatures one minute and a quarter.

As, for Example,

The architrave, according to the fractional part, is
 The freeze
 The cornice

According to the whole number, the entablature, divided into twelve parts,

The architrave will be

Freeze

Cornice

Minutes.	
36	$\frac{1}{2}$
27	$\frac{3}{4}$
45	$\frac{3}{4}$
109	$\frac{1}{4}$
36	
27	
45	
108	

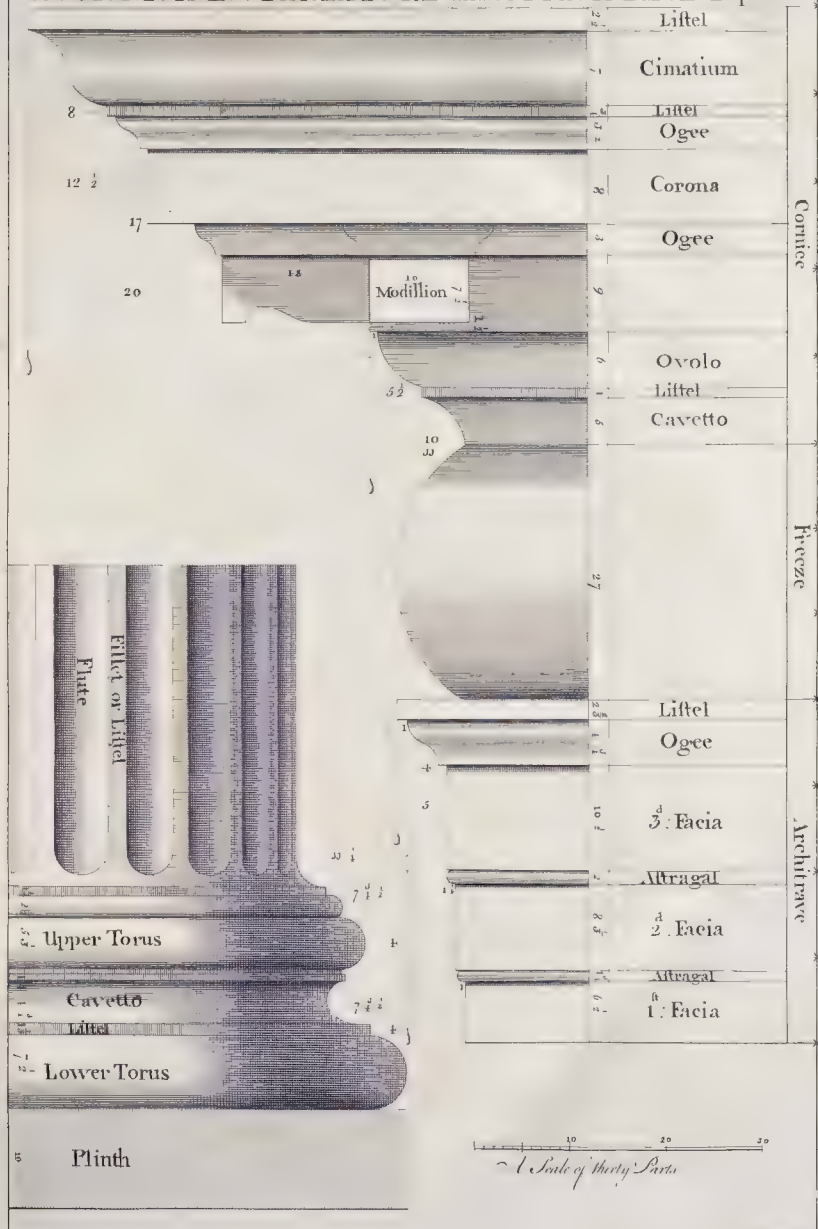
The division by minutes therefore is to be strictly regarded in working, the other being only a general method of giving an idea of the proportion of the several parts.



MOULDINGS

P 5

of the *IONICK ENTABLATURE* and *ATTICK BASE* Explained



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Chap. I.

Cornices, door-cases, and many other ornamental pieces, are formed out of a composition of *mouldings*. Some *mouldings* are crowned with a fillet, others not: some are commonly ornamented with carving. All *mouldings* in regular architecture may be reduced to three kinds, the rounded, the square, and the curv'd; and from a combination of these which are the principal ones, and an occasional mixture of the others, may be form'd a great variety of beautiful pieces: but in *Gothick* architecture we see fancy indulged at an extravagant rate to supersede the use of these antient and natural *mouldings*.

MOUTH.

A name by which workmen call the moulding architects call *cavetto*.

Mouth.

MUTULES.

A term used by some to express what are more commonly called *modillions*, which are brackets or consoles. Others appropriate the word *mutule* to these ornaments in the *Doric* order, and call the others only *modillions*.

Mutules.

NAKED.

A term used to express the plain surface of a wall, column, or other part of a build- ing, in distinction from the ornaments. Thus the *naked* of a wall is the flat plain surface of the wall that receives the *mouldings*; and the *naked* of a column is its bare surface.

OBELISK.

A tall slender kind of pyramid, usually placed on a pedestal and set up to terminate a vista, or to commemorate some great action. The general form of *obelisks* is to have eight or nine times their diameter at bottom in height, and their thickness at top to be from half to three quarters what it is at bottom. The use of *obelisks* was very antient; they were the first kind of books: men preserving the history or knowledge of the time upon them in figures: afterwards they were used as gnomons in dials, to shew the hour by their shadow upon a marked ground; at present they are merely ornaments. *Obelisks* may be properly enough called a kind of small pyramids, the difference consisting principally in their bigness, and in the form and dimensions of the base, proportioned to the height of the structure. They were supposed to represent rays of the sun, and thence named; *obelis*, in the Phœnician signifying ray.

OGEE.

Or, as it is sometimes written, *ogive*. A moulding very frequent in ornaments of all kinds, and, according to its position, properly divided into two; the *ogee* upright, being the *cymatium*; and the inverted *ogee* the *talon*. This moulding is of a waved figure, swelling at the bottom, and hollowed in the upper part; from this waved form it is called *cyma* and *cymatium*, from the Greek *κύματιον*, a wave.

Ogee.

The *cymatium* makes the uppermost member in cornices. This moulding may be properly said to consist of two members, the one concave, the other convex. *Vitruvius* makes each of these in measure a quadrant of a circle, but custom allows them not so much depth.

OGIVE.

The same as *ogee*, or as it is sometimes written O. G. a moulding, part swelling, and part hollowed, so that its-out-line resembles a wave. When placed with the hollow part upward, it is called the upright *ogee*, *cima recta*, or *cymatium*; when the swelling part is upwards, it is called an inverted *ogee*, a flat, and a *cima inverfa*. Some write *cima*, *fima*, but improperly.

Nº. III.

H

ORDER.

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ORDER.

A column entire, consisting of base, shaft, capital, and entablature, and proportioned to the use or service for which it is intended.

This is what is properly called an *order* of architecture: and the several uses and services requiring some distinction in strength, there have been contrived five kinds of these columns, three originally by the Greeks, the *Doric*, *Ionic*, and *Corinthian*, and two added by the Romans, the *Tuscan*, and the *Composite*. Each of these has its ornaments as well as general fabrick proportioned to its strength and use; and these are the five *orders*, the proper understanding of which is the great article in the elegance of buildings. See *Plate II*.

Beginning from the plainest and the strongest, these are reckoned thus: 1. The *Tuscan*. 2. The *Doric*. 3. The *Ionic*. 4. The *Corinthian*; and 5. The *Composite*.

The *Tuscan* is the most simple and strong, the column has seven diameters in height, and the capital, base, and entablature, have no ornaments, and but few mouldings.

The *Doric order* has the column seven and a half or eight diameters high; it has no ornaments on the base or capital, but its freeze is decorated with channelled figures, called triglyphs, placed at such distance as to leave square spaces between them. These square spaces are called metopes, and are sometimes plain, and sometimes ornamented with heads of beasts, and other figures.

The *Ionic order* has the column nine diameters in height; its capital has volutes, which are a kind of scrolls, and there are plain modillions in the cornice.

The *Corinthian order* has its column nine diameters and a half high; its capital is ornamented with two rows of leaves, and among these rise up stalks which curl round under the abacus, and represent, in some measure, the volutes of the *Ionic*, but they are smaller and more numerous; and the entablature of this *order* has modillions under the cornice.

The *Composite order* has its column half a diameter higher than the *Corinthian*, that is, ten diameters, but some make it more, and some less; and its capital has leaves and above them the volutes of the *Ionic order*. Its cornice has modillions.

These are the five great *orders* of architecture; what is said of them here will give some general idea of their form, and their several parts are described more at large under the articles of *BASE*, *CAPITAL*, and the rest. But beside these, there are some other manners and forms of building called by the name of *orders*.

The *Persian order* has men slaves in the place of columns to support the entablature; the *Caryatic order* has women; the *Attick order* has pilasters in the place of regular columns. The *Rustick order* is that adorned with *rustick* quoins, and the like decorations. The *French order* has a capital composed of cocks heads and flower de luces; its proportions are those of the *Corinthian*, from which it differs only in the ornaments of the capital. There is also a *Spanish order*, which is like the *Corinthian* in most things, but has a lion's head instead of a rose in the centre of the abacus. But these, though honoured with the names of *orders*, very little deserve such a title: the *orders* in architecture might be multiplied innumably on this plan, but there goes something more to the construction of what deserves that name.

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In good architecture every part means something. We have seen in another place what the design of the *Corinthian* capital was; it represents a basket covered with a tile, and surrounded with leaves of the *acanthus*. Leaves of a plant may surround a basket naturally as it stands upon the ground, or elsewhere, but cocks heads and the like cannot. The original *orders* have something great and noble in them, but there is nothing but quaintness and fancy ill-employed in these.

Chap. I.

ORDONNANCE.

A term used by some to express the same as order; but, in its general sense, it means the composition of a building, and the disposition of its several parts; it being this that determines the bigness of the several portions of which a building is composed, and the proper and judicious arrangement of them.

Ordonnance.

ORNAMENT.

A name by which some writers on architecture call the entablature of columns.

Ornament.

OVULO.

A moulding called a quarter round, from its shape, and from the carving with which it is usually decorated, the egg and anchor. It is common on the richer orders, and about chimney-pieces, and other decorated parts of a building; and, when carved, has eggs in a kind of case, with anchors between. It is called also the *echinus*, the *ove*, and by several other names expressive of its form or decoration.

Ovulo.

OVUM.

The same as *ovulo*, the moulding called a quarter round, which is generally cut in eggs and anchors. It has the name *ovum* from the egg, that word being Latin for an egg.

Ovum.

PARAPET.

A defence breast high on a terrace, or building. The *parapet* may be of brick or wood, a wall, or a rail, and may serve as an enclosure, as well as defence. The word is derived from the Italian *parapetto*, which signifies a defence to save the body, breast high; or a wall raised to the height of the breast. In military architecture, a *parapet* expresses a wall, or other defence, six or seven foot high, to defend the soldiers from the enemy. This is called also a *screen*. They are made of earth or stonework.

Parapet.

PARASTATÆ.

Pilasters which are insulate and free, not adjoining to any wall.

Parastatæ.

PEDESTAL.

A square body of stone or other materials raised to set a column upon, or for some like occasion. When *pedestals* are for columns, they should, according to *Vignola*, be of one third of the height of the column; but there is a great deal of difference in the determinations of authors on that head.

Pedestal.

A *pedestal* consists of three parts, the base, the die, and the cornice called its cap. There is in this a resemblance of the structure of columns, the base answers to the base of the column, the die to the shaft, and the cornice to its capital. *Pedestals* may be used to support columns of the different orders, and they must differ on this occasion according to the order they support. The *pedestal* for the *Tuscan* order is the plainest; its base is only a square piece, or sub plinth. The *Doric pedestal* is the same with the *Tuscan*, but that it has the addition of a base and cap. The *Ionic* is like the *Doric*, only the members are more and a little enriched. The *Corinthian pedestal* has its plinth, a carved torus, its listell, and cimafium; then the listell and ogee. The die is plain; its cornice consist of an ogee, a listell, an ovolo, corona, ogee, and listell.

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The *Composite pedestal* consists of the following parts: its base has a plinth, and a carved torus over that, then a reglet, an ogree inverted and enriched, and an astragal. The die is plain. The cornice consists of an astragal and cymasium, a list, cymasium, and a fillet; a corona, and an ogree, and its fillet.

In the *Doric pedestals* the pannels of the die should be in relievo, or projecting; in the other orders they should be hollowed, or in creux: this is an article of striking propriety, but the architects too often neglect or mistake it.

A square *pedestal* is that whose breadth is equal to its height.

A double *pedestal* is that which supports two columns, its breadth being greater than its height.

A continued *pedestal* is that which supports a row of columns, without any interruption or break. See *Plate I.*

Pedestals are much more used in modern than they were in antient architecture: and those of a very nice taste are for banishing them entirely from under columns. They say they were made for statues, and should be put to no other use, and that although *Vitruvius* has adopted to every order its particular *pedestal*, yet that columns of every order are better without them. Indeed a column never appears to stand so firm as when it rests upon the pavement. If we examine such works as have no *pedestals* to the columns, we shall find a look of solidity and composure in them which the others want. A column always seems less when on a *pedestal*.

PEDIMENT.

An ornament properly of a low triangular figure, crowning the front of a building, and serving often also as a decoration over doors, windows, and niches. Though the original and natural form of the *pediment* be triangular, it is sometimes made a segment of a circle, and sometimes broke to let in busts or figures.

The *pediments* of churches are often beautifully ornamented in basso, or alto relievo: in the *pediment* of the *Partbenion* at *Albens*, there are figures which stand quite free: the *pediment* of our *St. Paul's church* is ornamented with the conversion of that saint, in which the light has proved a very difficult thing to express in stone-work.

The *pediment* consists of its tympanum and cornice; the tympanum is the pannel on which these figures are represented, which is often left plain. The cornice crowns this tympanum; the most beautiful *pediments* are those where the height is about a fifth or two ninths of the measure of the base.

Sometimes the *pediment* is formed of two scrolls, or brackets, and open in the middle; the tympanum of the *pediment* is sometimes cut out, and sometimes a smaller *pediment* is encircled in it.

Pediments being representations of the ridge of the roof, ought not to be placed lengthwise, but always cross-wise of a building. A *pediment* no where looks so well as in the portal of a church, and that for this plain reason, that it is there always natural, and in the proper position.

The triangular shape is for the same reason best for *pediments*, because it is the natural form of a roof. An arched *pediment* is not, nor can be, the representation of a pointed roof; and a broken *pediment* takes from the idea of the use: there must be supposed to be another covering or roof within. *Pediments* placed one upon another, or one over another, as we see in some modern buildings, are very erroneous; the *pediment* represents a roof, we should never put one roof over another; why then should we put the representation of it in one *pediment* over another,

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other? It is unnatural in that representation, because it would be preposterous in the reality, and nothing that is unnatural can be beautiful. The *pediment* is for the same reason always to stand above the entablature; one would think this rule so obvious that it need not be named; but that we see it sometimes transgressed. When a *pediment* is put beneath an entablature, it represents a roof under a floor, than which nothing can be more contrary to reality. The *pediments* over doors and windows may be deem'd errors in this kind, they suppose so many roofs: but they are ornamental.

PEER, or PIER.

A square pillar without any regular base or capital. The *pier* is sometimes free, sometimes in part immersed in a wall; what the pillar is to the column, the *peer* is to the pilaster: each resembles the other, but is not ty'd down to that regularity prescribed by the proportions of the several orders.

Peers often have niches, and serve as ornaments in front of buildings: we shall give the figure of one of a very beautiful pair that stand in front of *Holland house*, the right honourable *Henry Fox's*, Esq; one of his Majesty's principal secretaries of state; the work of *Inigo Jones*.

Peer is also used to express a mass of stone-work, raised against the force of the sea, for the security of ships in a harbour, and for the supports of the arches of a bridge.

PERIPTERE.

A term used by the antient architects, and adopted by the moderns, to express a building encompassed round with columns. The word is derived from the Greek *περι*, round about, and *πτερον*, a wing, for they had a way of calling the rows of columns wings. These columns formed a kind of isle all round the building.

A building that had columns only before was called a *prostyle*, and one that had none at the sides, only before and behind, was called an *amphiprostyle*; but when the columns were on all four sides it was called a *periptere*; in the *periptere* the columns should be distant from the wall by the measure of one intercolumniation. The portico of *Pompey*, the basilic of *Antonine*, and the mausoleum of *Severus*, were *periptere* buildings.

PILLAR.

A column of irregular make, not formed according to rules, but of arbitrary parts and proportions; free or disengaged from the wall in every part, and always deviating from the measures of any of the orders of regular columns. This is the distinction of the *pillar* from the column. The column in our churches of the *Italian* architecture is always of one of the orders; the *pillar* in the *Gothick* buildings is often vastly too high for its thickness, and has no diminution. This irregularity of structure makes it a *pillar*, while the just proportions of the others entitle them to the names of columns.

These *pillars*, as they are without proportion in their parts, so they want proportion with respect to the building; we constantly see them either too thick, or too slender, and commonly extravagantly in one of these extremes or the other. The eye is at once a judge of this disproportion, even when the person who views them has not in the least considered architecture, always approving the column, and disapproving the *pillar*.

There are buildings about *London* in which the architect has deviated so far from rule in his columns, that they cannot be said to belong to any order; and may be better called *pillars*.

Pilaſter.

A ſquare pillar. The difference between the column and *pilaſter* is in the ſhape of the ſhaft; in the column it is round, in the *pilaſter* it is ſquare, in either it may be fluted, or otherwiſe ornamented.

Pilaſters ſometimes ſtand free and detached from the wall, but more uſually they are immerſed, or let into it, ſo deep as to ſhew only about a fourth part of their thickneſs.

The *pilaſter* may be of all the five orders as the column may: in each kind it takes the ſame ornament and name, and according to the order to which it belongs has the ſame proportions with the columns of that order.

The only reſpect wherein they differ from columns, beſide their ſhape, is that they may be all the way up of the ſame thickneſs. The column muſt have its diminution, and uſually has its ſwelling, but the *pilaſter* need have neither. Some architects however make the *pilaſter* occaſionally enlarged and contracted in the ſame manner as the column of the ſame order.

Detached *pilaſters* are a kind of modern improvement, if it may be ſo called, in architecture; the antients let them into the walls. There are inſtances of inſulate *pilaſters* among the antique remains, but they are few; and the practice was never approved in thoſe days of true taſte.

Pilaſters that ſtand free and with columns, are the only ones that ſhould have any diminution; they ſhould be all the way of a thickneſs when they ſhew only one face out of the wall; except when oppoſite to columns. The flutings of *pilaſters* ſhould always be in an odd number, but the columns they accompany may be fluted, and the *pilaſters* plain, or theſe may be fluted, and the columns plain.

The capitals of *pilaſters* muſt have the ſame height with thoſe of columns, but they are naturally broader from the ſhape of the ſhaft, and the diſpoſition of the ornaments.

Pilaſters, to have their true beauty, and beſt effect, ſhould be of a moderate height; for when they are too tall they depart from that character of ſtrength which they were intended to convey; and when they are too ſhort and thick they look like the piers for bridges.

As ſtrength is a great character of *pilaſters*, they very well bear a ruſtick ſuperficies.

In theatres, and other maſſy works, the *pilaſters* ſhould be as broad as the half the ſpace between them; or ſometimes *Vitruvius* allows them to be as broad as the whole. In other places their breadth ſhould be about that of a third of the ſpace; but thoſe which are to ſtand at corners are to be allowed a greater bulk for the ſake of ſtrength.

The true proportion of the *pilaſter* is an exact ſquare, but upon the plan for leſſening the expence, and allowing more room, they are commonly broader in front than in the flank.

PLATBAND.

Platband.

A ſquare moulding which has leſs projecture than height or breadth. The faces of an architrave are *platbands*.

The *platbands* of flutings are the liſts or fillets which ſeparate thoſe hollows on the ſhafts of columns.

The lintell of a door, or window, when it is ſquare, or not much arched, is called the *platband* of the door, or *platband* of the window. Any flat ſquare moulding, if not too projecting, is called by this name.

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PLINTH.

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PLINTH.

A square piece which is placed under the mouldings in the bases of columns. The *plinth* terminates the column with its base at the bottom, as the abacus does with its capital at the top. And the abacus in the *Tuscan* order being plain, square, and massy, has been called the *plinth* of that capital. See *Plate II.*

Chap. I.
Plinth.

PORTAIL.

A term used by many writers to signify the same as the frontispiece of a building. The *Portail* decoration of a face, or front, of a church is called the *portail*. The same word is also used by some to signify the principal gate of a palace, or castle; as also for the whole face of a church, including the great door.

PORTAL.

A word used to express a smaller gate, where there are a larger and a smaller: some use it at random for the gate where there is only one. It is also used to express an arch over a door way; and formerly it signified a square corner of a room, cut off from the rest, for the door or entrance.

PORTICO.

A place for walking under shelter, raised with arches, in the manner of a gallery. The *Portico*, *portico* is usually vaulted, but it has sometimes a soffit, or ceiling. The *portico* is a piazza encompassed with arches raised upon columns, and covered over head in any manner. The word seems to refer to the gate or entrance of some place, *porta* in Latin signifying a gate; but it is appropriated to a disposition of columns, forming this kind of gallery, and has no relation to the openings. The arcade which we call the piazzas in *Covent Garden* is a very fine *portico*, the workmanship is good, and the design does honour to *Inigo Jones*.

PROFILE.

Architects use this word in a different sense from painters; the latter express by it a *Profile*, head or other part seen sideways, or represented in a side view; but in speaking of buildings, it expresses the out-line of any member, as a base, cornice, or the like; or, when speaking of a whole building, the *profile* is the section of it, in which it is represented as cut down perpendicularly from the roof to the foundation, to shew its inward construction.

PROJECTURE.

This properly signifies the prominency, or jetting out, of ornaments from the bare surface or naked of the wall or column; thus mouldings are said to have so much *projecture* as is their distance at the thickest part from the surface of the wall or column to which they are fixed. The word is derived from the Latin *proietta*, which signifies *thrown forward*. In entire cornices the *projecture* should be always equal to the height: this is a maxim of *Vitruvius*, but it has been so misunderstood, that he was supposed to mean that the *projecture* of every moulding should be equal to its height.

The *projecture* of the bases and cornices of pedestals is greater in the antique than in modern works; the difference in general is about one third.

PROPORTION.

The relation which the several members of a column, or other part of a building, have to the whole of that column, or part; and which that column, or part, has to the edifice. When we say such a column is *proportioned*, it is meant that it is well *proportioned*, and so of any other part or member. The same term is used also to signify the different bigness which the members of architecture and figures ought to have, with regard to the distances from which they are severally to be seen.

There

Sima. The same as *cima*, or *cymatium*; the uppermost member in cornices.

SIMA.

SOCLE.

Socle. Written also *soele*. A square piece broader than it is high, and serving to place under the bases of pedestals to support vases and other ornaments. We have mentioned the continued pedestal for columns and other purposes; there is also a continued *soele*, which is a kind of stand without either base or cornice, carried round a whole building, and called a *plinth*. The word is derived from the Latin *foecus*, a shoe.

SOFFIT.

Soffit. A ceiling or platfond formed of cross beams, or flying cornices, which divide it into pannels or compartments, and having these compartments carved, or otherwise enriched.

The word *soffit* also expresses the under side of the larmier or corona in cornices, and the under face of an architrave.

When a wainscot is divided into small square compartments it is sometimes also called by the same name, to express its resemblance to the *soffit* in a ceiling, or under face of a cornice.

The *soffit* is what the poets mean by *lacunar* and *laquear* in the Latin; the difference expressed by those distinct words was, that the *lacunar* expressed the ceiling, when the compartments were only so many hollows, or *lacus*; and the word *laquear* was used when these compartments were intermingled with platbands, in form of twisted wreaths, ropes, or ribbands, from the word *laqueus*, a noose; parts of these being bows resembling nooses.

STEREOBATE.

Stereobate. A name taken from the *antique* for the pedestal of a column.

STYLOBATE.

Stylobate. A name also from the *antique* for the pedestal of a column.

SOLIVE.

Solive. A rafter, joist, or piece of wood slit or sawed, wherewith builders lay their ceilings. The thickness of these differs according to their length, and their distances are commonly equal to their depth.

SOUBAISSEMENT.

Soubassement. A French term appropriated by some architects, and signifying a *continued socle*, or a *continued stand* or *pedestal*, without base or cornice, carried round a whole building.

SPANISH ORDER.

Spanish Order. An order, as it is called, in architecture, in which the proportions differ little from those of the *Corinthian*; but there is a lion's head instead of a rose in the center of the abacus.

SPIRE.

A name given by some to the base of columns, because of its representing the folds of a serpent.

SQUARE.

A name by which some express the little square moulding called a *list*, *listel*, or *fillet*.

STATUE.

The representation of some person distinguished by his actions, and placed free from any wall, and as an ornament for buildings. *Statues* are, according to their bigness,

divided into four kinds; those smaller than life, those as big as life, those somewhat bigger, and lastly, those twice, or ever so much more than twice as big. These are called *colossi*, or *colossal statues*. Chap. I.

STRIGES.

A term by which some express the flutings or channellings on the shafts of columns, *Striges* supposed intended originally to represent the folds in a garment.

STRIURES.

A term by which some also express the *flutings* of columns. *Vitruvius* calls them by *Striures*, this name, and tells us they were originally intended to represent the foldings in a garment.

SWELLING.

A term used to express an encrease of diameter, in a part of the column between the base and the capital. This many declare to be unnatural, but it has the authority of great masters.

SYMMETRY.

The proportion which the several parts of a building have to one another, and to the whole. In what is called uniform *symmetry* there is this proportion observed through a whole fabrick, and all its parts have the same relation to one another: in respective *symmetry*, only the opposite sides are expected in this particular and exact manner to correspond to one another. The word is however generally used to express that relation and due proportion which runs through a whole building; it is derived from the Greek *συμ*, *with*, and *μετρα*, *measure*; expressing a work executed by just and exact measures.

SYSTYLE.

A term used to express one of the intercolumniations or spaces between columns. In the *Systyle* disposition, the intercolumniation is four modules, or two diameters, of the column.

TENIA.

A name by which *Vitruvius* and others call the *listell*, a square moulding.

Tenia:

TAILLOIR.

A name by which some who follow the French manner call the *abacus*.

Tailloir.

TALON.

A name by which some have called the *astragal*, and others the *ogee*.

Talon.

TERMINUS.

A kind of column adorned at the top with the head and sometimes part of the body of a man, woman, or pagan deity; and in the lower part diminishing into a kind of sheath or scabbard, as if the remainder of the figure were received into it.

The common use of the *termini* is by way of statues to adorn gardens, but they are sometimes also placed as consoles or brackets to support entablatures. These are varied greatly in the execution, some being rustick, others double, and the like.

THEATRE.

A place for a publick shew. The antient *theatres* were of a semicircular form, encompassed with porticos, and furnished with numerous seats, which included a place called the *orchestra*, in the front of which was the floor of the *theatre* called by them *proscenium*. This had a large facade or face ornamented with the orders of architecture. Behind this was the *postcenium*, or *poscenium*, where the actors made themselves ready for appearing in their several characters.

The word *theatre* is derived from the Greek *θεαμα*, to view.

The

A COMPLETE BODY

The term *theatre* is also used for an assemblage of several buildings which together present an agreeable prospect to the eye.

In the more restrained sense of the word it was the place of a public spectacle, and nothing else.

What is called the temple of *Bacchus at Athens*, the remains of which are yet in being, was a *theatre*, and one of the first we know of.

TIGNA.

Tigna. The antient term for *joists* or *rafters*, with which builders lay their ceilings.

TONDINO.

Tondino. A name by which some have called the *astragal*.

TORUS.

Torus. A large round prominent moulding in the base of columns, resembling a cable, but without the wreathings or twistings. The word is derived from the Greek *τορος*, a *thick rope*. In the bases of some of the orders there is a single torus, in others there are two with a *scotia* between them; and in this disposition they have a very beautiful effect.

TRABEATION.

Trabeation. A name by which some call the *entablature* of a column, consisting of the architrave, freeze, and cornice.

TRIGLYPH.

Triglyph. The name of an ornament in the freeze of the *Doric* order. This figure has two entire channels cut down it to a right angle, and separated by three plain spaces, from the two demi-channels on the sides. This is the exact description of the *triglyph*, which will be perfectly understood by the assistance of the figure in the second plate.

The name is Greek, it comes from *τρίς*, *thrice*, and *γλυφες*, a *channel*, though the entire channels are but two.

The *triglyph* is particular to the *Doric* freeze, and was used in that order in the most antient buildings.

One *triglyph* is to be placed exactly over each column, and the rest at equal distances in the intercolumniation, leaving square spaces between them. These spaces are called the *metopes* of the *Doric* freeze, and are sometimes left naked, sometimes ornamented.

TROCHILUS.

Trochilus. A name by which some call the hollow moulding that is between the two torus's of the base of columns, and which is more commonly called *scotia*. *Trochilus* comes from the Greek *τροχιλος*, a *pulley*: this moulding, when it stands thus on columns, having much the appearance of a pulley.

TRUNK.

Trunk. When we speak of a column, the *trunk* is the shaft or fust: when the word is applied to a pedestal it signifies the *dado*, or *die*, or body of the pedestal, answering to the shaft of the column.

TUSCAN.

Tuscan. One of the orders of architecture. It is of Roman origin, and much resembles the original *Doric* of the Greeks. The original Greek orders were only three, the *Doric*, *Ionic*, and *Corinthian*; to these the Romans have added the *Tuscan*, which is plainer than the *Doric*, and the *Composite*, which adds the volutes of the *Ionic* to the leaves



Persian.

Caryatic.

A. Benning sculp.



leaves of the more decorated capitals. The orders from three by this became five, and of these the *Tuscan* is the plainest, strongest, and most massy.

The base of the *Tuscan* column consists only of a single torus, resting upon a plinth, and crowned with a cincture; the shaft has six diameters in height, and its diminution is a fourth or a fifth part, for in these things architects vary. The capital is very plain; it consists of an abacus, a quarter-round, astragal, and fillet; under the neck there is another astragal and fillet, but these belong to the shaft of the column. The entablature is plain and large, it consists of an architrave of one face, a plain freeze, and a cornice with a few plain mouldings.

The *Tuscan* order is therefore no other than the *Doric* made stronger by shortening its column, and simpler by the largeness and small number of its mouldings.

No order is so easily executed as this, because of its plainness; but there is, notwithstanding, a beauty in that plain simplicity of structure, which makes it deserve a place not only where strength but where elegance is considered.

TYMPANUM of a pediment.

Is the pannel or triangular plain space within the pediment.

Tympanum
of a pediment

VASE.

An ornamental piece enriched with carving, representing a vessel, and placed on a pedestal, or otherwise, as a decoration for buildings.

The common method is to represent in these pieces some of those vessels which the ancients used in sacrifices, or on other important occasions; but fancy takes a great scope here, and often very happily.

Some comprehend under the word *vase* the urns on monuments and other buildings, but this being of a different form should be kept to their distinct name, as we have explained under the word urn.

The word *vase* is sometimes used to express the body of the *Corinthian* capital, or that part of it on which the leaves are fixed, and which is concealed by them. This is otherwise called the *bell*, or *campana* of that capital.

VAULT.

An arched roof contrived in such manner that the stones or other materials of which it is composed, support and keep one another in their places.

Arched ceilings are a kind of *vaults*, and they are very beautiful as well as strong.

Vaults are made circular, elliptical, or of other forms; and their sweep takes in a larger or lesser portion of a circle. When they take in more than a semicircle they are called high or surmounted *vaults*; and those which have less than a hemisphere are called low or surbas'd *vaults*.

The key of a *vault* or arch is the middle stone which binds and fastens all the rest.

The impost of a *vault* or arch is the stone on which the first of the arch is laid.

Double *vaults* are those built over one another; this is done for the sake of uniformity in the inside and outside of a building.

VESTIBLE, or VESTIBULE.

A kind of entry or passage into large buildings, presenting itself before the entrance into the hall, or at the bottom of the stair-case.

Vestible, or
Vestibule.

Among the ancients the *vestible* was a large open space before the door, or at the entrance of a house.

Sometimes it is used for a magnificent and elegant piece of building, square, or octangular, and ornamented, situated between the court and the gardens in superb buildings; and sometimes it is used as another word for an anti-chamber, or small apartment at the entrance of a larger: but the first is its just and proper signification.

Virginal Or-
der. A name by which *Scammozzi* has called the *Corinthian* order.

VOLUTE.

Volute.

The name of the scroll which is the distinguishing character of the *Ionic* capital. It is supposed to represent the bark of a tree which is laid upon the rim of a vessel, and as it has dried has curled and twisted itself into a kind of spiral scroll.

There are a sort of volutes also in the *Corinthian* capital, but they are smaller and more numerous than in the *Ionic*; and in the *Composite* capital these large and proper volutes of the *Ionic* are added.

In the most antique *Ionic* volutes the list or edge throughout all the circumvolutions, is in the same line or plane; and in some they project: in some they are oval, and in others the canal of one circumvolution is detached from the list of another by a vacancy; in others the round is parallel to the abacus, and springs out from behind the flower thereof; and in some it seems to spring out of the vase from behind the ovum, and rises to the abacus.

The *volute* has by some been supposed to represent the horn of a ram, and by others the curl of a woman's hair; but the most natural resemblance is that of the bark, and that is most in the character of the antient designs in architecture.

Consoles, modillions, and some other ornaments, have sometimes a sort of *volute*.

URELLA.

Urella.

The little spiral twist or volute that is under the flower in the *Corinthian* capital; it is formed by a twisted stalk of the acanthus, and is more commonly called the *belix*, sometimes the *caulicole*.

URN.

Urn.

A kind of vase serving to crown and decorate balustrades, and other ornamental parts of buildings.

Urn is too commonly used as of the same meaning with vase, but it properly denotes a distinct kind and form. The *urn* should be low and wide, and is fittest for grottos and fountains. *Urns* are also used on tombs, for which purpose they are generally enriched with sculpture, and are distinguished by the name of funeral *urns*. The antients preserved the ashes of the burnt bodies in *urns*, and thence has arisen this custom of using *urns* on monuments and mausoleums.

XYST, or XYSTOS.

Xyst, or xystos.

An antique term used to express a portico of a great length, in which were performed several feats of running and wrestling. The *xyst* was sometimes covered, sometimes open.

This was the sense in which the term was most antiently used by the Greeks; the Romans called by the same name a long walk, a kind of ile or portico, whether covered or open, ranged on each side with rows of trees. Sometimes also it was used to express only a long walk planted with trees on each side in double rows, and making a sort of arch over the top, so as to form a kind of long arbour.

ZOOOPHOROS.

Zooophoros.

A name by which some have called the *freeze* of the entablature; it has this name from the custom of representing animals of many kinds upon it in carving, ζῷον being Greek for an animal.

C H A P. II.

Of the materials used in building.

IF any think we stoop too low in a treatise of architecture to consider the materials, we shall answer him in the language of Sir *Henry Wotton*, "that it cannot disgrace an architect, which so well becomes a philosopher, to look into the properties of stone and timber." We propose a general work upon the subject, and we hope to leave no part of it untreated, nor any thing that concerns it untouched. In a natural course of the science the materials are to be considered, before the form into which they are to be disposed; and he who sets out as a builder without a sufficient knowledge of them, is deficient in a fundamental part of his profession.

It has been the practice of the best and greatest writers to treat of them, and they have left us many good remarks upon the subjects, and much useful knowledge; but that which has been done neither in this, nor in any other part, is perfect; and far from restraining the enquiring mind from farther researches, it incites to them.

We have the authority of *Vitruvius* and the example of *Palladio*, for giving this consideration a place even in the first part of our work; and to all that they have delivered, and all that has been since discovered by the genius of the architect and the industry of the working builder, we think something material may yet be added. On one part of the subject can it be added more usefully; there is therefore none in which we shall endeavour it with more attention.

Vitruvius, the great master in the science, has condescended to treat largely of sand and clay, and what he has written on these subjects, will be a benefit to all succeeding generations: the directions also of *Alberti* and *De L'Orme* if too nice, yet are just and useful.

Without a knowledge of the materials the architect will not know what is to be executed with them: but thoroughly understanding their nature and qualities, he will distinguish what he can, and what he cannot, make them bear; and will astonish perhaps the age with fabricks into which none have entered but the MEANEST.

He only, who knows exactly what cannot be done with any kind, understands fully what can. Such a one will undertake works that would deter others, which, the bolder they seem in the design, will the more extol his judgment in the execution.

The architect is best pleased when he is employed on the richest materials; but he may do himself most honour with the others. With what pride must he listen to the admiration of the passenger, who, looking up at some new edifice, exclaims, Who would have conceived that such a structure could have been raised with such materials!

A COMPLETE BODY

It is by a thorough knowledge of their nature alone, that such praise can be obtained; and that knowledge is the more immediate business of the *English* architect, because, however he may excel those of other countries in judgment, they will have the advantage of him in most places in this article.

Most books of architecture have been written where marble is the common produce of the quarry: in *England* our best stones are very poor, in comparison of those; and in most places the builder cannot even obtain them; but must be content with brick. It is of the utmost importance to him to understand the nature of those several kinds of stone his country produces, that he may know how best to employ them, when he has them; and to acquaint himself perfectly with the strength of the several kinds of brick where the others are not to be had. These are subjects the more needful to be treated at large in the present work, because they are imperfectly managed in the best of the others, foreigners having written them, who therefore could not be masters of this particular part of the subject.

Palladio could not judge of the difference between *Portland* and *Purbeck* stone; and it is impossible to learn from all *Vitruvius* has written concerning bricks, whether those he mentions were burnt, or dry'd in the sun.

We do not name these as faults or blemishes in the works of those great men; they were natural defects, for they had not the means of knowledge, or the opportunities of obtaining it, respecting these things: but they shew the necessity of an *English* body of architecture for the use of the *English* builder, a necessity which we shall be very happy if we are as able to supply, as to discern.

It is the honour of the architect that the form triumph over the materials; in the former judgment and taste are shewn; in the latter only expence. The most ignorant builder could have piled up as large heaps of marble as he who built the *Coliseum*, but the symmetry and order are the praise of true genius.

The first preparation for building should be sufficient materials, and sufficient money: the skill of the architect is to be employed in making the most of the former with the least expence of the latter. This can only be done by a perfect knowledge of their several natures; and this we shall endeavour to convey in the succeeding pages. Strength is so great a consideration in all buildings; that their elegance and convenience are of no consequence without it; and there is no way of giving them strength but by a knowledge of the materials.

Beside giving strength to buildings, there will result another good consequence from the perfect acquaintance with the materials, which is a saving of expence: for there will be a certain saving of quantity.

It is a sure consequence of ignorance in this respect to overload; this gives weight and a heavy aspect to the edifice, and sinks an unnecessary sum of money. He who knows

knows on what he is to depend will know also how far he is to depend upon it, and while the other, for fear of wanting strength, loads his building with expence and weight, he who is sensible what is the force of each kind of material, will depend on it so far as he can with safety; and while on the one hand he secures himself from danger, will on the other give a lightness to the building while he diminishes the price.

These we understand to be the advantages which will be obtained in consequence of a full and perfect acquaintance with the materials: they are of the greatest importance; and we shall therefore endeavour in the most careful manner to convey that necessary knowledge.

C H A P. III.

Of Stone in general.

THE first and most essential of the materials used in building is stone. Under the general consideration of it, in a book of this kind, we are to include every thing which nature affords under that name; and afterwards whatsoever the art of man has devised to imitate the qualities and supply the place of these several kinds. Under this latter denomination will fall the several sorts of bricks and tiles, the one used to supply the place of thick stones in erecting walls, the other to officiate for the thin sorts called slate, in covering roofs. But the first regard is due to stone naturally formed and dug out of the earth.

In the first and general consideration of stone, we shall divide it into three kinds. This material has been generally divided into two species, according to its finer or coarser form, under the name of *stones* and *marbles*; but there is a third, which, though in general included among the marbles, differs more from them than they do from stones, in hardness, and other essential qualities; this comprehends the porphyries, granites, and some other species.

Following the course therefore pointed out by nature in the different qualities, matter, and properties of stone, we shall divide it into three kinds, beginning with the meanest, and ending with the richest and most noble. The three general kinds of stones thus distinguished, are

1. The common quarry-stones, and slates;
2. The marbles.
3. The porphyries and granites.

The first kind are distinguished by their coarse aspect, and the rough particles of which they consist; the second by their fineness and beauty; and the third by their extreme hardness.

Most of the quarry-stones, and all the marbles, will burn into lime, like common limestone; and they are all soft. The porphyries and granites are hard like flint, and will in the same manner strike fire with steel, and a fierce fire takes little or no effect upon them.

Book I.

The common stones are the produce of our own quarries ; the marbles we principally have from *Italy* ; and the porphyries and granites from the East. The common stones are used with us in erecting walls, and on the outsides of buildings ; the marbles serve this purpose in countries where they are plentiful and cheap, but here they are used for ornaments within ; and the granites and porphyries are principally admired in the columns, and other great works of antiquity ; we sometimes use them for tables, and in the decoration of chimney-pieces, but the distance from whence they come, and their extreme hardness, are reasons why we see little of them any where in modern buildings. We find the cutting and polishing so expensive, that few will be at the charge ; and we are astonished when we see the works executed in them by the antients.

These harder kinds have a great advantage over the other marbles when wrought : those polish easily, but they are easily hurt and damaged, every little accident scratching them ; when the granite is polished the work is done for ages, scarce any thing but a diamond can make an impression. The polish they take also is high in proportion to the difficulty with which it is given, and there is a singularity in their aspect very pleasing.

These differ therefore in the most essential points from marble, and it is an error to confound them with its kinds : they approach more to the nature of the semi-pellucid precious stones.

I have observed that we have some of these precious kinds more common than we imagine ; if any body would be at the trouble or expence of polishing them. It will seem strange to say the streets of *London* are paved with granite, but it is true ; whoever is acquainted with the nature of stones, and walks out after a smart shower, will perceive this, the rain washing them, and giving them for the time a natural polish. These stones are brought from the island of *Guernsey*, where they lie upon the sea-shores ; and it would be worth while to search that place for quarries.

The marbles are polished at a small expence, and have a beauty that sufficiently recommends them : as to the common stones they are easily cut smooth, but they will not take much polish, nor is it ever required of them.

Having premised thus much as to the general distinction of the three kinds, we shall consider them separately under those heads in the succeeding chapters.

C H A P. IV.

Of common quarry STONES ; Their kinds, uses, and the ways of digging them.

QUARRY stones are rough and coarse, but some more than others. They are distinguished from marbles by their having neither naturally a glossy surface where broken, nor being capable of any fine polish.

They may be distinguished into two general kinds: the first such as lie in thick compact masses, and are fit for building of walls, and forming of columns, and other the like purposes, where firmness is required; the other such as lie in flat and thin flakes; or are so constructed by nature that they easily split into such, and are used for covering of roofs. Of the former division of these are the common blue and purple slates, and of the latter are several sorts of grey stone that easily split for that purpose.

Of the first kind, or those which are not apt to split, but are used in building walls, and the like, we have four principal species; these we distinguish, according to the places from whence they come, by the names of

1. *Portland* stone. 2. *Purbeck* stone.
3. *Bath* stone. And 4. *Ryegate* stone.

All these are called by the name of free stone by some; while others limit that title to the *Bath* and *Ryegate* kind; but this is an arbitrary term, and people use it according to their pleasure.

Of these four kinds of quarry stone the *Portland* is the best. It stands extremely well in the weather, equally well with marble; and better than many kinds of it. It is therefore the fittest of all for outside work. The *Purbeck* is also an excellent stone for many purposes: none stands better in forts and walls near the sea, and in many other purposes of strength and decoration. The *Bath* stone does very well upon or near the spot, but not so well in *London*; and this is a general and a true observation, that all stones stand better, and serve for purposes of strength and beauty both, much more successfully upon or near the place where their quarries are, than elsewhere.

PORTLAND STONE is not destined altogether to outside work. The better sort of stone chimney-pieces are made of it, at an inch and half or two inches thick: it also serves very well at an inch and half thickness for paving, in which service it is sometimes laid plain, and sometimes with black marble dots. In steps also it serves excellently: it looks very beautiful plain, but much more so when bordered with an astragal, or round moulding. It is also used in copings, three inches thick on one side, and an inch and half on the other; and no stone answers better in curbs for iron-work: in this case it is usually cub'd first, and then measured superficially.

For the more elegant parts of buildings, *Portland* stone is preferred to any other kind; the shafts of columns are cut out of it; and it not only bears fluting freely,

and stands well in that form ; but the elegant capitals of the *Corinthian*, and other rich orders, may be finely executed in it, and will hold perfectly well.

PURBECK STONE is used much in paving, and is very strong, in random and strait courses, and it serves well in steps ; in both these uses it is inferior to the *Portland*, because it is less hard, and it will not take so good a surface ; we must not call it polish, for in the *Portland* it does not amount to that ; but where we do not aim at polish, smoothness is a great consideration. The *Purbeck* is cheaper than the *Portland*, and therefore there is a great consumption of it : it will serve also for some other uses to which the *Portland* is applied, but the other is so much better that the cheapness of this hardly is a sufficient recommendation.

BATH STONE is principally used for walls, and is fittest for that purpose ; it answers to some of the other occasions, but is very much inferior to the *Purbeck* in its durability and strength.

RYEGATE STONE is commonly called fire-stone, and its principal use is for coving and hearths. It works very easily, but it wants strength for many other purposes.

These are the principal kinds of quarry stone with which we are acquainted in *London* ; but beside these there are several very good kinds dug and used in different counties. They have a fine white free stone in *Dorsetshire*, but its fault is being brittle ; in *Northamptonshire* they have a greyish kind, but brittle also ; and in *Dorsetshire* there is a hard white kind, very valuable, and capable of a smooth and good surface. There is also a brownish kind that cuts very freely, common in many of our Northern counties. In *Yorkshire* they have a greyish kind that is full of little spangles ; and in *Suffex* and *Gloucestershire* there is a brown one extremely hard, that glitters in the same manner. These are all of them used in the several places where they are produced ; but there is not one of them superior to the *Portland*, either in beauty or durability, so that they are not worth bringing to *London*.

When a quarry of any one of these kinds of stone is found in a place where they will be worth digging (that depending, in a great measure, on the place and situation) there is a great deal of consideration needful for the getting them up.

When the bed of stone, in many species, is examined, there are two kinds of grain discovered, the one running flatwise, and the other perpendicularly ; the first they call the splitting grain, and the other the breaking grain.

In the slate kinds this cleaving or splitting grain shews itself at every part of the surface ; so that they may be split at any thickness ; but in these stones it is only at certain distances, and those very considerable. The stone will thus rise regularly flatwise at a certain depth, but no art could split it into thinner flakes, the grain running cross in the several blocks, though here and there strait in the whole beds.

The quarry-men, when they have cleared away the earth above, get at a side face of the stone, and in this they search carefully for the splitting vein : when they have found this, they drive in a great number of wedges in several places, and by degrees heave and force up a large bed of it to the surface.

When they have thus raised and loosened the upper bed of stone from the rest, they go to work upon separating this vast flat piece into such sizes as are demanded most; this being much more easily done while the stone lies in the quarry than at any other time. To that purpose they are to consult the breaking grain; in some places, this of itself runs so regularly, that with little force or care the great cake separates into squares, or oblong pieces; and they must take these as they come. Where there is not this natural and visible grain the manner is this: they draw lines across the flake, or great cake, regularly, according to the sizes into which they intend to break it; along each of these lines they cut a slight channel, and into each channel they insert several wedges, as they did for cleaving: they drive these slowly and evenly, till they thus cut off a long piece of the breadth they intend, and of the whole length of the flake; and this they separate into such lengths as they chuse, in the same manner, by marking the places by a line, and breaking off the pieces by wedges.

Some stones are even, and others of a cross grain; the even-grain'd ones succeed a great deal the best in this work; and those which are softest. In the free kinds it is surprising to see how regularly the pieces will come off, and how easily it is done; but it would not be so easy, or proceed so regularly, when the stone had lain some time out of the quarry.

For the hard and cross-grain'd stones they are obliged to have recourse to other methods; to get these up they cut deep and wide channels on the surface, and confine their wedges to these by iron bars, and then driving them take the piece as it comes: or they use gunpowder. This has a very great and a very speedy effect, but it is altogether irregular. They put a quantity of powder in a hole bored in the rock, and ramming it up tight, leave room for the train by an iron wire which they draw out afterwards.

These two methods raise and loosen a great quantity of stone at a little expence, but then it comes in irregular pieces; so that the other manner, when the nature of the stones will admit of it, is greatly preferable.

In these better works they often follow the bed of stone to a great depth, splitting off one flake, and then another; and they draw it up with wheels which they fix upon the heap of rubbish first raised in opening the pit.

A COMPLETE BODY

C H A P. V.

Of the manner of using QUARRY STONE.

WE have observed that all stone succeeds better on the spot where it is produced than elsewhere: this is doubly true, because it not only works easier but lasts longer; and there is an advantage to the builder, because the expence of carriage is saved.

It is the advice of *Palladio*, that all stone be wrought as soon as may be after the digging, because it works the easier. We have seen how freely the great flakes in which it rises are broken into proper pieces in the quarry, and the hewing it farther into form is easier while it is fresh dug than at any other time.

All stone whatsoever hardens when it lies out of the ground: this is the reason for working it quickly; and this may be a caution to the person who shall find a quarry upon his estate, not to despise it because soft when in the bed, for it will soon harden.

When the stone is found in a new place, so that its nature is not known, and when it rises soft, it is best to be exposed to the air some time, to see what it will come to before it is used. Summer is the fit season for digging, and it should lie till that time next year at least: it will be better if it lie two years exposed to the air to see the effect. Some pieces will naturally be prejudiced in this exposure, and they may be rejected or used out of sight, the others in more conspicuous places.

The digging of stone in summer, and exposing it, is a kind of seasoning it for bearing the winter rains and frosts: these might injure it when fresh from the bed; but having thus been used to bear them by degrees, and after being first hardened by the summer exposure, it will stand in building without damage.

We have shewn the builder which are the fittest for inside work, and which will best bear the weather, let him chuse them for the several purposes accordingly.

Alberti advises, that all the stone used in the walls and essential parts of a building, be out of the same quarry; and he has great reason for that caution: the architect will hope to see his work last uniformly, and there is no better way of assuring himself on that head than by this care in the principal materials.

De L'Orme orders, that the lime for the building be made of the same stone that is to be used with it; but this is idle: we shall shew hereafter, that the lime made of hard stones is best; but the fire makes such an alteration in this work, that it is weak to imagine there should remain any kind of sympathy between it and the stone of the same kind from which it was made.

A great deal of the success in the building where stone is to be employed in any quantity, will depend upon the choice of the kind, and in this the strength and durability

are more to be considered than the easiness of working. In general, those kinds of stone which cut the most easily decay the soonest: the same loose texture which makes them work so freely, renders them unable to bear the assaults of the weather. The air is a kind of universal dissolvent: we see in old buildings what effect it has upon the stones, and especially upon those used in the ornamental parts: let the builder look up to these and learn caution.

If he hope for the admiration of posterity, which ought to be the design in every great work, let him consider that this cannot be obtained unless the materials will retain their form: let him see what is the power of the air, and expose only such stone to it as will best resist its insults: none will do this entirely; but, by chusing the hardest kinds for the outside work, and the hardest of all for such parts as are to be decorated with carving, he will succeed the best he can; and the others will answer as well for the inside, where no injuries will be offered to them, often outlasting those on the outer parts that are twice as strong.

C H A P. VI.

Of the various kinds of SLATE:

THERE are two kinds of slate principally used about *London* for the covering of houses, the blue and the purple; and these differ more in their colour than in their qualities: but, beside these, there are a great many other kinds of stone that split naturally and easily into thin pieces of any size, and we see them used for the purpose of slates in the places where they are dug. They are coarser in their structure than the common blue slate, and they have two disadvantages; they load the roof more and they do not bear the weather so well, for they will not split into so thin pieces, nor are of so close and even a grain.

The common blue slate is dug in many parts of *England*. It commonly lies at a small depth; and, beside the splitting grain, by means of which it is easily cleft to almost any thinness, it is commonly divided into a kind of stacks, by breakings, cracks, and fissures. These stacks are from one foot to four or five in diameter, so that they are always ready to furnish slates of such sizes as are wanted, and are rather an advantage than an inconvenience.

The purple slate lies in the same manner, but it is usually harder and of a finer grain.

It is common to see small square pieces of a yellow matter naturally sticking in these slates, and looking as if they were made by art of polished brass. They are lumps of a substance called by the writers *mundick*, and are composed only of sulphur and vitriol. They are a disadvantage to the slates, for they will moulder to pieces after being some time exposed to the air. Some are very hard, and remain entire a longer while; others perish sooner.

Beside these, which are the common slates, there is the *Iris* slate, which is used as a medicine, but it is softer than those of a worse colour, and does not last; and there are a white and a redish sort of the stony kind, pretty nearly approaching to the nature of the others. The grey slate, called the *Horsham* kind, is of the stony or bad sort, and is inferior to many of the kinds in other parts of *England*.

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Beside the use of slate in the covering of houses, it serves for being framed to write upon, and tables are set with it for the same purpose; but these are out of use, because they cut and scratch so easily. The thicker pieces of the stony kinds are used also in paving.

For many uses we import slate from *Germany*, but it is not needful, for we have enough of it good at home. The *German* is said to be very soft in the quarry: ours is much softer there than afterwards, and works very regularly and conveniently. There is no natural covering for a house so light, so lasting, or so beautiful, as the blue or purple slate, for the distinction between them is little. Common tiles are heavier than slate of this fine kind, and the stony slate is heavier than tiles. The fine slate is dearer than the covering with tiles, but it is vastly preferable in every respect: it is much more close and beautiful, and there are instances of its continuing good a hundred years. After the covering of lead, there is none comparable to this by fine slate.

As we recommend slating to the architect for so many reasons, and as it is allowed to be a very expensive covering, we shall deliver him some practical rules for the judging of the goodness of the slate before he uses it, for there are some kinds that will last twice as long as others that look just the same.

The great value of slate consists in its soundness in thin pieces, and in its fine texture, by which it resists the entrance of wet. The expence of laying slate is very considerable; and that which is soft and spongy, or is loose and unsound, lets in the wet, to the destruction of the timber underneath. A parcel of fine and well-chosen slate will last in the laying much longer than lead, some of that requiring to be rip'd and new laid after a very few years.

To judge of the goodness of slate, let the builder first of all strike several pieces against any thing hard to make it sound: if it ring clear and well it is good; but if not, there is something unsound in the texture of it. The builder is not to judge by one piece or two, for they may be damaged by accident, but trying several, he will this way make a near guess at the goodness.

After this let him set several pieces of the slate edgewise in a vessel of water, the water reaching up about half way of the height of the pieces: if they draw water, and become wet to the top in six or eight hours time, they are spongy and bad; but if they do not appear wet above an inch or two over the level of the water, they are sound and good.

Finally, another very good way is to weigh a piece of slate carefully, and then put it into a vessel of water, where it shall be covered all over: let it remain there half a day, and then taking it out, let it be wiped clean and weighed again: if it weigh but little more than at first it is good: but according as it weighs more and more, after this soaking, it is worse and worse. The same loose texture that here admits the water will let in the wet in rainy weather, and spoil the wood work that supports it.

These are methods for trying the soundness and value of slate, and every builder ought to use them, for the eye is no judge. Nothing is more deceitful than a slate, and the expence is so considerable by that time they are laid, that no care is too much.

C H A P. VII.

Of the several kinds of MARBLE.

WE have already observed, that marble not being the natural produce of this country, comes at too large an expence to be employed in the outside work of buildings. In limiting the production of marble to other countries, we are however to make a reserve of some kinds, which although truly such, are found in *England*, and probably the curious inquiries of the present age will discover more. It is not probable however that we shall soon discover them at home in such plenty as to use them as common stone, so that we are to treat of them as serviceable in the ornamental, rather than the essential parts of buildings. Their uses in these are so many, according to their several kinds, that we import them annually at great expence; and as they differ extremely in beauty as well as price, we shall enter upon an examination of their several kinds.

Those in most frequent use are the white veined marble, the white and purple, both from *Italy*, and the black from *Namur*; but as beside these there are many others used in great and elegant houses, we shall give a catalogue of those several kinds, according to their colours and variations.

Of the entire white marbles there are the common *statuary*, which is soft, and the *Carrara* which is harder.

Among the black, or approaching to that colour, there is first a blueish black kind, common in *Germany*, which was the *Numidian* marble of the antients; as the black marble of *Namur* before-named was their *Lucullean* kind. What we call the touchstone, is a black marble, and was called the *Chian* by the antients; and our black *Irish* marble of the *Giant's Causeway* in *Ireland*, was their touchstone, called the *Lydian* and *Obsidian* marble. It is singular in this kind that it rises naturally in columns of an angular figure, and composed of joints in a nice manner, as if formed by art.

These are all the plain black marbles that are known, and of these scarce any is used but the common *Namur* kind, though that of which the *Giant's Causeway* is composed is vastly superior to it in beauty and hardness, and that single quantity in the county of *Antrim* might supply the kingdom of *England* for ages. It would be expensive to cut, but the beauty of the polish and the hardness, would make good amends.

Of the other plain coloured marbles, there is a yellow we sometimes have from *Italy* of the nature of the yellow part of the *Syenna* marble; and about *Bristol* there is a vein of a plain green marble that would be very beautiful in slabs and chimney-pieces; but it is not regarded.

Next after these we shall enumerate those marbles which have variations made in them by shells and other bodies petrified and contained in them. What is called *Derbyshire* marble is full of the parts of a star-fish of a particular kind: this is of a whitish

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brown. We have a green marble from *Bohemia* full of small grey shells, of which the columns in many of our *Gothick* churches are made; and there is a greyish marble of the same kind. We have a blackish marble, very beautiful, full of a kind of white coral in broad branches, which is too little regarded; there are great beds of it in *Derbyshire* and *Wales*, and it takes a fine polish. The tomb of the famous Sir *Thomas Gresham* in *Great St. Helen's* church at *Bishopsgate*, is made of this marble: we have also another black marble beautifully spotted in white, with shells and corals, brought from *Kilkenny* in *Ireland*. We have named these the more particularly because they are the produce of our own country, and though we have them in great plenty they are neglected.

We shall next enumerate the veined and spotted marbles, dividing them into several assortments, according to the colour of their ground. The common purple and white, which our workmen call purple marble, we have named already; we sometimes import a brown and white kind from *Italy* that is pretty enough but very soft; and we have at home a very beautiful and hard red and white marble. It is produced in great quantities in *Devonshire*, and is called by the workmen *Plymouth* marble. The blue and white which our workmen call white and veined comes also from *Italy*, and is the most common kind of all. We have in *Cornwall* and *Devonshire* a brown marble veined with white and red, which we neglect, while we import a brown one variegated with white and black, much inferior to it in every respect, from *Italy*: there is also from the same country a brown kind variegated with white only, which is much harder.

Of the yellow marble with variegations we know but two kinds; first, the fine *Syenna* marble which is yellow and purple; and secondly, a yellow and blue marble common in *Spain*, but not much valued.

Of the variegated marbles with a black ground, there are two which have white veins, one brought from *Italy* in great quantities; the other seldom, because of the hardness of the white part. There is also a black and yellow very beautiful, the yellow looking like veins of gold; this comes from *Italy*. There are two others of this kind also, a black with white and red veins; and another with white red and yellow.

Of the variegated marbles with a green ground there are three; first, the *Egyptian* marble, which is green with white veins, and was the *Tiberian* and *Augustan* marble of the *Romans*. Secondly, a hard green marble, spotted with black and white, and called the black serpent stone, or ophites, by the antients. And thirdly, the softer green marble, with white and black variegations, called the white ophites. The former of these is what the people of taste call verde antique.

There are three grey marbles variegated also, one with small black spots only, called the grey ophites, or tephria, by the antients; a second grey with green spots only, and a third grey with green spots and veins.

To these if we add the variegated marble with a red ground, called brocatello by the *Italians*, which is veined with white and yellow, and was the *Theban* marble of the antients; we have before us all the really distinct known kinds of marble.

Most of these are in our power, though few of them are used, and we see that even such as we have at home are neglected. We have judged it proper to give
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this list of them, that the student in building, when he sees them in use, may be able to call them by their names, and that the accomplished architect may know at once how large a choice, and how vast a variety, he has before him; and may be tempted to bring into use those which we have at home, which have no fault but that they are not known; unless it be that they are of our own production.

After these, which are known by the name of marbles, we are to name three kinds very nearly approaching to their nature, and called alabasters; and we have then, in one view, all the stones of this beautiful class:

The first of these is the plain alabaster, which is a white and glittering stone, like the finest statuary marble, only more brittle; this was the ancient *Greek Lygdine* marble; the second is a plain yellow alabaster, which they called phengites, very beautiful, and the most transparent of all the kinds; and the third is what our workmen call oriental alabaster, a very beautiful stone, of a yellowish colour, elegantly veined with brown and redish. We have a softer kind of this last in our own kingdom, which is very beautiful; the greatest quantity of it is found in *Cornwall*, among rocks of lime-stone.

What is called *Egyptian* marble is now brought from *Italy*, where there are large quarries of it. The kind called brocatello, before described, is also found about *Auvergne* in *France*, and in the East near *Adrianople*; the *French* is inferior to the *Italian*, but the other is much superior; and there is a famous quarry of it also near *Tortosa* in *Spain*. The marble called cippolino by the *Italians* differs little from the *Egyptian*, but is finer; what we see under the name of *Egyptian* in many old magnificent houses is this kind. What is called peacock's tail marble, is of the brocatello kind, but has the spots rounder, and more determinate in figure, than they are usually in that species.

These are the names by which the workmen, and those of a higher rank in architecture, and in the polite arts, distinguish the several kinds of marble that are at this time imported for use, or are found in buildings erected some time since: in general their meaning is very ill determined, but what is fixed among them is upon this foundation.

Of the manner of using MARBLE.

WHERE marble is very common, and therefore cheap, it enters rough into the structure of many buildings, and shews itself on their outides: with us, those which are the produce of our own country not being sufficiently known, and the others coming at a large price, they are seen only in the decorations principally within, and always polished.

In the cutting there are difficulties and inconveniencies in some kinds, and in the polishing in others. Several of the species are so brittle that they crumble under the tools, and some so harsh that they fly off in splinters: the first is the fault of the white, and the other principally of the black marbles.

In the polishing, some are found to have metallic spots in them, which give a great deal of trouble; these are principally of the mundic kind, or of the nature of those square yellow lumps we have described in slates: there often lie clusters of them together in marble, and they give a great deal of trouble, and sometimes continue a lasting defect. These blemishes the workmen call *emeril*, and they are most frequent in the variegated marbles that have a white ground.

Other pieces have a kind of knobs like the knots in timber, which are a great deal harder than the rest of the block; and in others there are hollows which must be filled up with cement to make the surface level: there are also frequently streaks like threads in pieces of marble, which discover themselves in polishing, and are a great defect: these last are called *thready marbles*, the others *terrace marble*; and both faults lower the value of the slab.

The *French* make what they call an artificial marble, and some years since it was getting into fashion with us, but it is too soft for use. It is made from a transparent stone called *selenites*, which resembles crystal but that it is soft. This calcines like plaster of *Paris*; and, when wrought up in the same manner, it becomes tolerably firm, and will receive a moderate polish. The stone it is made of is found in clay-pits, and used with us as an ornament of grottos. Some mix powdered marble with this stone, and calcine them together into a kind of plaster powder which hardens on being wetted: this is the practice by which they sometimes also harden the common plaster for casts.

Beside this marble as it is called, which is artificial in its substance, there is a practice of giving the colours artificially, but they never look like the natural: it is done by corrosive liquors, and the stone may be polished afterwards, which gives an appearance of the colours being natural. It is not difficult to give these colours, for white marble is so soft that it is easily stained: a drop of oil will penetrate it; but there is always a look in the coloured parts that, to a judicious eye, will discover the artifice.

The architect should never condescend to meddle with any of these artificial kinds, or artificial colours: nature, in her plainest state, is preferable: he has a vast variety before him in the several species before mentioned, and in the different blocks they vary so much, that a fanciful person might give them new names, as a number of other kinds, and an ingenious architect may dispose them in such manner as to produce a surprising variety.

We will suppose only the several kinds that are common, and always to be had, are in his hands: he has here a variety of plain black, plain white, black and white, white and blue, white and purple, together with the *Egyptian* green, and the yellow and purple *Syenna* kind: out of these he may with judgment form a vast variety of ornaments, whose different colours, properly disposed, will greatly assist the form into which they are thrown, and give a richness to the work.

The choice and disposition of the kinds of marble according to their colours, are subjects that have not been sufficiently considered; and that will afford an extensive field to the man who has taste for varying and adding beauty to the most elegant of his ornaments.

In the first place, the architect is to consider that the excellence of marble is one thing to him, and to the connoisseur another. A marble becomes a curiosity because it is very scarce, because it is brought from a great distance, or because the quarry is exhausted. To the people who are devoted to those studies, a piece of marble is inestimable, because there is not another block to be had, and the generality are apt to be led away by them.

On the contrary, it is the beauty of the stone, and not its scarcity, that should recommend it for ornaments in building. The colours, and the course of the clouds and veins are to be examined; and the height of taste in this way is to be shewn in making a proper assortment of them. If those kinds that serve the purpose are cheap so much the better: the *Syenna*, that is the most beautiful of them all, is not nearly so dear as porphyry, whose colours have nothing of that spirit: and the liveliness of tint is a vast article in this consideration.

We have seen the arms and supporters of persons of quality represented over their chimnies in marble of proper colours, the dragons green, and the wheat-sheaves yellow; but this is quaint and little, and is by no means what we mean by the proper assortment of colours; we speak in a larger way, and treat of ornaments, not devices.

This consideration will banish a great deal of expence while it discloses taste. The eye is intended to be struck at once with a chimney-piece, a tomb, or an altar; and every eye should be captivated by it. The scarcity of a marble will not produce this effect, for it is a value of another kind: every one is not a judge of it, but he must be blind who does not perceive the harmony and beauty resulting from a variety of lively and graceful colours properly disposed.

What we have said, we hope, will lead the architect to think properly upon a part of his profession, which seems to have been generally passed over with too little attention; and we shall add to these general observations a few practical rules.

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Let those marbles, in their several kinds, be preferred whose ground is most pure, whose spots are best terminated, and whose veins run in the most agreeable manner: they should be light, and fantastically displayed: for a heavy variegation, or a vein running in a strait course, displease: where there is to be sculpture let the white be used, for nothing is more disadvantageous to a piece of carving than veins of another colour. They throw false lights and create confusion. For the lower parts, in general, no kind of marble is so well as the plain white; and the most beautiful of the coloured kinds should be disposed in columns and other ornaments, as freezes and pannels; and in this is to be shewn the great art of arranging them, so that they shall mutually set off one another.

We would have the architect take care also to suit his colours to the subject: let him be as lavish of the lively tincts as he pleases in an elegant chimney-piece, but let him take care not to use too many of the gaudy colours on a tomb.

We are sensible that in this, and many other things, we shall be arraigned for running counter to the practice of many good sculptors and statuaries; but we are not founding our rules upon what is executed, but what should be; not upon custom, but reason.

Too much black deadens any work, and too much of the tender colours render it insipid. There is a spirit in the black with white veins which is altogether wanting in the white with blue: the black and yellow has a solidity and richness of appearance; and there is something very pompous in the yellow and purple. We are fonder of the green and white than it deserves: it serves excellently when used sparingly, but it has a strange deadness where there is too much of it.

A piece of beautiful marble may be made to appear doubly so, by being placed near another of a proper colour; or it may, by an ill disposition, be shown as much to disadvantage.

We see, in the marble tables that are set in brass, how excellently the metalline yellow agrees with, and sets off, the stone: gilding agrees with most kinds yet better; and this is an additional ornament by which the finest compositions of marble may be enriched greatly. There are some kinds that will be hurt by the brightness of the gold yellow; but those colours that will bear it, as most will, are decorated by an edge of brass, well gilt, beyond what would be conceived by those who have not seen the effect.

C H A P. IX.

Of PORPHYRY and GRANITE.

THESE have been generally reckoned among the kind of marble, but they together differ from it in their nature and qualities, as well as in their structure and degree of hardness; as has been shewn already. They also differ very essentially from one another in their construction as well as colours: but as they are of less frequent use than the others, and agree in most respects so far as the architect is concerned in them, we shall treat of them in the same chapter.

PORPHYRY is a stone of extreme hardness; its colour is purple stained with white, and this is commonly disposed in small irregular spots.

We have no occasion to seek farther for what porphyry we use than to the remains of antique works: the antients employed it frequently, and must have been at surprising pains and expence to cut it; but they were in the right, for sculptures in this stone are made for an hundred ages. The remains of columns, and other ornamental works made in their time, furnish us with all the porphyry we have; and they are cut to pieces at a great expence by brass saws without teeth, as we saw marble with iron ones; and with emery instead of sand. From the great difficulty of cutting porphyry at this time, many conjectures have been made about the manner of working it among the antients; some suppose they tempered steel to a hardness that could cut it better than any we can procure at present; and others suppose they softened the stone; but both these are idle opinions: possibly the porphyry is now become much harder by long exposure to the air, for we know this is common to all stones; or the antients might have more spirit to go through works of expence in this as in other instances.

There are two distinct kinds of porphyry met with at this time, very different from that of the antients: one is of a red lead colour, with white, black, and green spots; the other of a pale flesh colour, with the same black and green spots, and a little white: the first is found in the island of *Minorca*, the other in *Egypt*, and *Arabia*. The first-mentioned kind might be very well worth importing, if we could fall upon any tolerable method of working it, but it is nearly as hard as the antient.

No art has been more sought after than that imaginary secret among the antients of tempering their steel so as to make it work freely on porphyry; *Alberti* proposes using goat's blood, and *Cosmo de Medicis* is said to have distilled a water from herbs that had the same effect, on dipping the steel in it. Works in porphyry were executed by persons assisted with the tools thus tempered; but they were not great, and they proceeded very slowly. The power of either of these tempering liquors is imaginary, and the chisels would have taken just as good effect without them.

The *French* cut porphyry with iron saws without teeth, and with the grit of a kind of hard free stone, but the work is very slow.

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In effect, all these secrets signify little or nothing. A well-tempered chisel of the common kind will cut porphyry a little, and it may be sawn by a plain saw of any metal, but slowly: this is the whole truth, and all these supposed improvements have not at all mended the matter.

What is called the tomb of *Bacchus* is the finest work of porphyry now remaining.

GRANITE is a stone of greater hardness than porphyry, and of a much more singular aspect, and greater beauty; its ground colour is a pale red, and it is variegated with black and white, in small and irregular spots. These have a singular appearance; the white in particular being somewhat transparent, so that one sees a little way into the stone: this is the granite of the ancients, and is what we understand by that name used singly. The moor-stone brought from *Cornwall* is a black and white granite; and we have observed before that there are many of the stones in the pavement of the streets of *London* truly of the granite kind.

The fine granite is produced in *Egypt*, and other parts of the East; it is extremely hard to cut, but takes a most beautiful polish. We have in *England* stones of other colours, which have the true nature, hardness, and construction of the granite, but want its beauty; and in *Italy* and *France* they have quarries of what they call by that name; but the *Italian* granite is very soft in comparison of the oriental, and that of *France* is flinty but ill-coloured. We find a variety of tints in the granite of the East, and in that which has been wrought and is found in the remains of antiquity, some of it is of a dusky whitish ground, and other pieces have greenish spots instead of black; but in all the hardness is the same, and we are astonished, as in respect of porphyry, at the works that we see cut in it; not conceiving how they have been done. We find the remains of masses of a vast bulk, and columns of forty foot in height.

We see the hardness of those granites wherewith our streets are paved, by the force with which they resist all injuries; the moor-stone we cut into steps, and other works of the like kind, and it is very strong: it is capable of a beautiful polish, if any would be at the pains to work it.

They have vast quantities of this moor-stone in *Ireland*, but disregard it; and with us it is not put to all the uses to which it might serve.

The architect will find little use of the porphyry, for it is one of those stones before named, whose value lies in accidental considerations, not in the beauty: if it fall naturally in his way it may be used among others, and he may take advantage of its vast hardness where there will be great wear.

The granite may be much more useful to him. We see how elegant a figure it makes in tables when set in brass; and this may shew what effect it would have in many kinds of work: columns in elegant chimney-pieces are sometimes made of it, and nothing has a more singular, or beautiful appearance.

C H A P.

C H A P. X.

Of BRICK.

BRICK, as it supplies the place of stone in our common buildings, and is composed of an earthy matter hardened by art, to the resemblance of that kind, may be very well considered as an artificial stone. It therefore properly follows in this place, and is of so great use, and so many species, that it demands and deserves our considerate and particular notice.

Bricks are made of a clayey or a loamy earth, pure, or with various mixtures: they are shaped in a mould, and after some drying in the sun or air, are burnt to a hardness. This is our manner of making bricks: the use of them was very antient, but whether they were always made in the same manner admits a doubt; we are not clear what was the use of straw in the bricks for building in *Egypt*, and there is room to question whether those of many later periods were ever exposed to the fire. There are remains of great brick buildings of the *Romans* in which the bricks seem never to have been burnt, but to have been hardened by a very long exposure to the sun; and this their own accounts confirm, there being mention in some of their writers of four and five years drying for this purpose.

The *Greeks* built with bricks, and they used them of six different shapes, at least sizes; three being the principal, and there being as many exact half sizes; this gave a variety to their appearance.

We are in general ty'd down by custom to one form and one size, but that very idly: eight or nine inches in length, and about four in breadth, is our general measure; but beyond doubt there might be other forms and other sizes introduced very advantageously. Sir *Henry Wotton* mentions with commendation a particular form of brick from *Daniel Barbaro*, which is in shape triangular, of equal sides, and each a foot long. The thickness he mentions is an inch and half, so that his may be well enough called a kind of thick tiles, but that may be altered at pleasure. There is no doubt but bricks of this and other regularly angular forms might be used with advantages in many parts of our common buildings.

It has been proposed by some to steep bricks in water after the burning, and then burn them over again, in order to give them greater strength; but this may be much better done by a proper choice of the materials, and a thorough skill and sufficient labour in tempering them.

It is an observation of *Palladio*, that the antients made their bricks of a larger size, which were intended for great buildings, and this was certainly right and reasonable; but he is aware of the difficulty there must have been in thoroughly and equally baking of such: we are assured, by the very names, that the *Greeks* had bricks of five palms long, that being the sense of the name given to the largest sort they used in common buildings.

A COMPLETE BODY

The manner of burning is a thing very essential in the structure of brick. It is commonly done in a clamp about *London*, but in some places in a kiln. Some of the finest bricks are burnt in the kilns erected for *Tiles*. See *Plate V*.

The degree of burning makes a considerable difference in the condition of the bricks; but their principal distinction is from the nature of the materials with which they are made: these being not only various in themselves, but made different in a much greater degree by the mixtures given them in the working.

C H A P. XI.

Of the several kinds of BRICKS.

A Great variety of bricks have been contrived by different persons, and made at different times; and long and perplexed descriptions have been given of the way of fabricating them; but at present they are in a manner reduced to four sorts, our builders finding these sufficient to answer every purpose. These are *place bricks*, *grey stocks*, *red stocks*, and the finest *red bricks*, or *cutting bricks*. Adding to these two or three foreign kinds imported for particular purposes, we have before us all that is used in this way, and it would be needless for us to meddle with any other: our purpose being to write not for the satisfaction of an idle and useless curiosity, but for the service of the practical builder, and of the gentleman who employs him.

As to the materials of bricks, we have already said they are all made of earth of a clayey or loamy nature: the more pure the earth is used the harder and firmer will be the brick; but then the less mixture there is with it, the more labour it will require in working. The brick-makers guide themselves according to this rule, and finish their work according to the service for which it is designed.

GREY STOCKS are made of a good earth, well wrought, and with little mixture.

PLACE BRICKS are made of the same earth, or worse; with a mixture of dirt from the streets; and these are often so miserably bad they will hardly hold together.

This is the principal difference between the two kinds of common bricks, as to their substance; the grey stocks being sound and firm, because the earth of which they are made is purer, and the place bricks being poor and brittle, because of the mixture of other matter with that earth, and less working.

RED STOCKS, and the RED BRICKS, called also from their use CUTTING BRICKS, owe their colour to the nature of the clay of which they are made; this is always used tolerably pure, and the bricks of the better kind are called by some CLAY BRICKS, because they are supposed to be made of nothing else.

We do not pretend here to enter into the niceties of the brick-maker's business, every profession has its secrets, which are kept among those who follow it; neither is it our business to instruct the reader in the making of bricks, but in the using them in

building. Thus much it was needful to say, that he might understand the nature of these as that of the other materials wherewith he is to work; and this is the general account of them. The grey stocks, he sees, are made of a purer earth, and better wrought, and they are used in front in building, being the strongest and handsomest of this kind; the place bricks are made of the clay with a mixture of dirt and other coarse materials, and are more carelessly put of hand; they are therefore weaker, and more brittle, and are used out of sight, and where little stress is laid upon them: the red bricks of both kinds are made of a particular earth well wrought, and little injured by mixtures, and they are used in fine work, in ornaments over windows, and in paving. Chap. 11.

These are often cut or ground down to a perfect evenness, and set in putty instead of mortar; and on many occasions they in this manner make a very beautiful appearance.

These are the three kinds of bricks commonly used by us in building, and their difference is owing to this variety in the materials. The place bricks and grey stocks are made in the neighbourhood of town, wherever there is a brick-work; the two kinds of red bricks, depending upon a particular kind of earth, can only be made where that is to be had; they are furnished from several places within fifteen or twenty miles of London.

We have observed in the beginning of this chapter, that there were two or three other kinds of bricks to be named which are imported from other countries; and there is also one of the red or cutting brick sort that is of our own manufacture, and for its excellence is very worthy to be particularly mentioned: this is the *Hedgerley* brick; it is made at a village of that name, of the famous earth called *Hedgerly* loam, well known to the glass-makers and chemists.

This loam is of a yellowish colour, and very harsh to the touch, containing a great deal of sand; its particular value is that it will bear the greatest violence of fire without hurt: the chemists coat and lute their furnaces with this, and the ovens at glass-houses are also repaired or lined with it, where it stands all the fury of their heat without damage. It is brought into London for this purpose, under the name of *Windsor* loam, the village being near *Windsor*, and is sold at a large price: the bricks made of this are of the finest red that can be imagined, they call them *fire bricks*, because of their bearing the fire, and they are used about furnaces and ovens in the same way as the earth.

The foreign bricks that are to be named are the *Dutch* and *Flemish* bricks, and clinkers; these are all nearly of a kind, and are often confounded together: they are very hard, and of a dirty brimstone colour: some of them not much unlike our grey stocks, others yellower. The *Dutch* are generally the best baked, and the *Flemish* the yellowest. As to the clinkers they are the most baked of all, and commonly are warped by the heat.

These are used on particular occasions, the *Dutch* and *Flemish* for paving yards, and stables, and the like, and the clinkers, which come also from the same places, in ovens.

C H A P. XII.

Of the manner of using BRICKS.

THE reader who has thus far acquainted himself with the nature and qualities of the several kinds of bricks, their several strength, colours and beauty, will easily enter into the distinctions that are made in the use of them. As to their nature, it is proportioned to their several degrees of goodness. The fine red-cutting bricks are twice, or more than twice, the price of the best grey stocks; the red stocks half as dear again as the grey; and the place bricks, as they are a great deal worse, so they are much cheaper than any of the others. This will be shewn more at large hereafter: it is only hinted here as an article of consideration in the using them.

The grey stocks, and place bricks, are employed in the better and worse kinds of plain work: the red stocks, as well as the grey, are used sometimes in this business, and sometimes for arches, and other more ornamental pieces: the fine red-cutting bricks are used for ruled and gaged work, and sometimes for paving; but the red stocks are more frequently employed when a red kind is required for this purpose.

The red-cutting brick, or fine red, is the finest of all bricks. In some places they are not at all acquainted with this; in others they confound it with the red stock, and use that for it; though, where the fine red brick is to be had pure and perfectly made, the difference is five to three in the sale-price between that and the red stock,

The red stock and the grey are frequently put in arches gauged, and one as well as the other set in putty instead of mortar: this is an expensive work, but it answers in beauty, for the regularity of this disposition, and fineness of the joints, has a very pleasing effect.

The fine red brick is used in arches ruled and set in putty in the same manner; and, as it is much more beautiful, is somewhat more costly. This kind is also the most beautiful of all in cornices ruled in the same manner and set in putty.

The grey stocks of an inferior kind are used in bricking of walls.

The place bricks are used in paving dry, or laid in mortar, and they are put down flat or edgewise. If they are laid flat, thirty-two of them pave a yard square; but if they be placed edgewise it takes twice that number.

In the front work of walls the place bricks should never be admitted, even in the meanest building. That consideration therefore only takes place in the other kinds; and the fine-cutting bricks come so very dear this way, that few people will be brought to think of them; so that it lies in a great measure between the grey stocks and red stocks.

Of these the grey are the most used; and this not only because they are cheaper, but in most cases where judgment is preferred to fancy they will have the

We see many very beautiful pieces of workmanship in red brick; and to name Chap. 12.
 one, the front of the green-house in *Kensington-Gardens* will be sure to attract every
 eye that has the least curiosity: but this should not tempt the judicious architect to ad-
 mit them in the front walls of the building.

In the first place, the colour is itself fiery and disagreeable to the eye; it is trouble-
 some to look upon it; and, in summer, it has an appearance of heat that is very dis-
 agreeable: for this reason it is most improper in the country, though the ofteneft used
 there, from the difficulty of getting grey.

But a farther consideration is, that in the fronts of most buildings of any expence,
 there is more or less stone work: now one would wish that there should be as much
 conformity as could be had between the general naked of the wall and these several or-
 naments which project from it: the nearer they are of a colour the better they always
 range together: and if we cast our eyes upon two houses, the one red, and the other
 grey brick, where there is a little stone work, we shall not be a moment in doubt
 which to prefer. There is something harsh in the transition from the red brick to stone,
 and it seems altogether unnatural; in the other, the grey stocks come so near the co-
 lour of stone that the change is less violent, and they fort better together.

For this reason also the grey stocks are to be judged best coloured when they have
 least of the yellow cast; for the nearer they come to the colour of stone, when they
 are to be used together with it, always the better.

Where there is no stone work there generally is wood, and this being painted white,
 as is commonly the practice, has a yet worse effect with red brick than the stone work;
 the transition is more sudden in this than the other: but, on the other hand, in the
 mixture of grey bricks and white paint, the colour of the brick being soft, there is no
 violent change.

We make the grey stocks at this time to a great excellence about *London*, as many
 new pieces of brick work shew, to the credit of the undertakers. The duke of *Norfolk*
 was so nice in this respect, that he had the bricks brought from his estate in that
 county for the building the front of his house in *St. James's Square*; but the event
 shews that his grace might have been better supplied near at hand, as to colour, with
 equal hardness.

The greatest advantage a grey stock, which is the standard brick, can have, is in its
 sound body and pale colour: the nearer it comes to stone the better: so that the prin-
 cipal thing the brick-maker ought to have in view, for the improvement of his pro-
 fession, is the seeking for earth that will burn pale, and that will have a good body,
 and to see it has sufficient working.

The judicious architect will always examine his bricks in this light, and will be ready
 to pay a price where it is deserved by the goodness of the commodity.

Of TILES.

TILES are very much of the nature of bricks, differing more in the shape than in the substance: they are made of an earth finer or coarser, and are wrought according to their use and price; more pure, or with mixtures. The common kind are made of a blue clay that is found every where about *London*, though usually at some depth: it often lies under the common kinds of brick earth; and, when wrought into form, is baked in kilns, as the bricks are in clamps: those kilns in the shape of cones, or sugar-loaves, at this time used about *London*, are well contrived, and answer the purpose excellently. We have given the figure of a very complete one, and its parts, in *Plates V. and VI.*

There is so much conformity in the substance of bricks and tiles, that the earth that makes one will in many cases serve for the other. The clay of which tiles are made may always be wrought into bricks, but only the best of the brick earth can be wrought into tiles; because, being thinner, they require more toughness in the substance.

The properest clay for tiles is the toughest and the purest: when there are any foreign mixtures among it they should be carefully separated from it: the depth at which it lies keeps it in general free from stones, but there commonly are found abundance of lumps of a substance looking like brats in it: these are frequently in the shape of shells, and have a natural polish; they moulder and fall to powder only by being exposed to the air, though they will keep entire for ages when they are in the bed of clay: and what is more remarkable, they will remain whole under water ever so long, though the air soon destroys them.

These are lumps of the same nature with the yellow square pieces in flates which we have mentioned before, and consist of sulphur and vitriol as they do. Such of them as resemble shells have been moulded in real shells, some being found with the shelly part not wasted, though they have most likely lain there from *Noah's flood*. These are the things of which copperas is made: they pick up great quantities upon the shores where the water has washed them out of the clay in the cliffs, and sell them at some price. It is the tilemakers interest to clear his clay of them as soon as it is dug; and it will be in many places worth while to save them in heaps, their price paying the trouble of picking them out.

Clay for tiles is to be dug in the months of *September and October*, and to lie exposed all winter: it must be turned in *January*, and may be worked up into tiles in *February*.

All tiles are made in the manner of bricks, by tempering and beating up the clay to a due consistence, and then fashioning them in a mould; but more care and pains are required in this work than in making of bricks, for the tile-making approaches more to the pottery work, and the earth of which they are made is such as might be employed in potteries, and in some places is so.

Tiles being thin would be more apt to crack and break than bricks, which have more body and substance; the clay therefore whereof they are made, must not only be in its nature more tough and firm, but it must be more thoroughly wrought, that it may have equal firmness in every part: and when the tile is shaped, if of the common kind, it is to be kept flat; but if of the pan or gutter kind, it is to be bent afterwards upon a mould to a proper form, and this must be done while it is soft, that it may be take and retain the impression. More care is also required in the management of the fire for burning them, than is needful in bricks; for if it be too slack they do not get a proper hardness, and if too violent they suffer in their shape and are glaz'd. In burning bricks in the clamp the fire is lighted, and they are left to themselves, but in the kiln for burning of tiles, the fire must be watched and managed with discretion, and he must be a trusty as well as knowing person to whom this care is committed, for a little neglect may be of vast mischief and loss to the proprietor.

C H A P. XIV.

Of the various kinds of TILES.

WHAT has been said with respect to bricks, is applicable to tiles also, with regard to their several kinds; a great many sorts have been invented and recommended at different times, and have got into use in various places; but practice, which is the only judge of convenience, has in this, as in the case of bricks, reduced these to a smaller compass. In the place of that great variety we hear of among the workmen of some time ago, the tiles for all sorts of uses may now be comprised under six heads. 1. The plain tile for the covering of houses, which is flat and thin. 2. The plain tile for paving, which is flat also but thicker, and its size 12, 10, or 9 inches. 3. The pantile, which is also used for covering buildings, and is hollow and crooked, or bent, somewhat in the manner of an S. 4. The *Dutch* glaz'd pantile. 5. The *English* glaz'd pantile. And 6. The gutter tile, which is made with a kind of wings.

These are the kinds used on the exterior part of buildings, but we are not to close this list without mentioning that small glaz'd flat kind which is called the *Dutch* tile, and is sometimes plain, and sometimes decorated with figures. This is used about fire places, and is of a different substance from all the others, being tenderer and more easily damaged.

COMMON TILES are best when they are firmest, soundest, and strongest. There are not so many differences in these as in bricks, either in respect of body or colour, but according to the nature of the clay, and the degree of fire in burning, some are duskier and some ruddier in colour. The dusky-colour'd are usually the strongest; the workmen sometimes, when they have both colours, amuse themselves with laying them separately in rows, in which case they give the roof a striped aspect. But this is a pitiful and idle fancy.

PAVING TILES are made of a more sandy earth than the common or plain tiles: the materials for these last must be absolute clay, but for the others a kind of loam is used,

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used, though it must be of a tough substance, or they will not have due strength and firmness. This loam burns to a fresher red colour than the best of the common tile clay. These are made thicker and larger than the common roof tiles; and, when care has been taken in the choice of the earth, and the management of the fire, they are very regular and beautiful.

PANTILES, when of the best kind, are made of an earth not much unlike that of the paving tiles, and often of the same: but the best sort of all is a paler coloured loam that is less sandy: they have about the same degree of fire given them in the baking, and they come out nearly of the same colour.

GLAZED PANTILES, whether *Dutch* or *English*, get that addition in the fire, many kinds of earthy matter running into a glassy substance in great heat, as is seen in the glazing of common earthen-ware; and it is a great advantage to them, preserving them much longer than the common pantiles, so that they are very well worth the additional charge that attends the using of them.

GUTTER TILES are made of the same earth as the common pantiles, and only differ from them in shape: but it is advisable that particular care be taken in tempering and working the earth for these, for none are more liable to accidents.

DUTCH TILES for chimneys are of a kind so different from all these, that they should scarce be treated of in the same place. They are made of an earth much more approaching to the potters kind, and have the same sort of workmanship, not that of the tile-kiln in the way we have described for the others.

The earth of which these are made is of two kinds, at least of two perfectly distinct colours; some is white, and some quite black: but this makes no difference in the work, for the black kind becomes quite white in the burning. This will not appear so wonderful to the reader when he has been told that about *Northampton*, and in many other places, they make tobacco-pipes of clay that is entirely black, but grows white in the fire.

The clay of which these *Dutch* tiles are made, is very fine, soft, and tender: it is much the same with that whereof the apothecaries pots are made, and it is glazed in the same manner. These were once in great reputation in ordinary houses, but at present they are grown into neglect, and that not without reason.

C H A P. XV.

Of the manner of using TILES.

THE great use of tiles is for the covering of houses; and for this purpose where either service or beauty are regarded, the plain common tile is greatly preferable to any other: but this in its best condition is not at all comparable to slate.

Plain tiles, we have observed, are in colour either reddish or dusky. In the first condition they have a fiery look, and in the other they appear poor and dirty: either way they have a rough coarse and heavy aspect; and the mortar in the best manner of laying them is seen very plainly in irregular white joints and seams:

We have observed that red bricks look ill with stone-work, or painted wood, any where near them; because their colours do not mix agreeably, or set one another off, but appear as an opposition: the same is true of all kind of tiling: it must have no stone or painted wood near it. No tiles of whatever colour agree at all with either; neither do they look well with the brick-work of the chimnies.

The neatness and pale look of the common slate gives that covering a vast preference. Having nothing coarse or fiery in the appearance, it agrees perfectly well with the stone or wood-work, and with the grey brick of the chimnies. Then in the place of the harsh and heavy aspect of the tiles, slate has a light and elegant appearance: the pieces are thin and lie regular, and the joints of mortar are so slender they are scarce at all seen. This preference is so very great, that it entirely banishes the use of tiles from elegant edifices, or other buildings of expence; and when we consider how vastly more durable slate is, as well as handsome, we shall be inclined to prefer it in all.

If the plain tiling be thus inferior to slate, the pantiling is much worse than that both in duration and aspect. There are occasions on which tiling is proper, and there are particular buildings whereon pantiling is better than the plain method; but what we have said is delivered as general, and admits these exceptions: in ordinary buildings adjoining to houses, and particularly in such as have flat roofs, the pantiling does very well, and comes cheaper than the other kind, the tiles being a great deal larger, and laid with less trouble. The plain or common tiles have holes for pins, and are hung on by means of those pins. The pantile has a lump in the place of a pin, and hangs by that: a few of them cover a great deal of roof, and where they are not in the way of accidents, they will last a great while, but they are easily loosened, injured, or broken.

The Dutch glaz'd pantiles are better than the English glaz'd, but either are much superior to the common pantile, and for most uses to the plain tile; they are dearer, but their bigness makes great amends for that, and they are very lasting. In the common pantiling the difference in size is so great an article, that where seven hundred and sixty plain tiles, at a six inch gauge, are required, the same space which is a square-

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Book I. will be covered by one hundred and seventy pantiles. The use of gutter-tiles is explained by their name, their place being in the valleys or gutters of cross buildings, and when they are used they are laid plain, without any nailing, the broad end upwards.

As to the thick tiles, when they are found and the colour good, they are a very pretty paving for country ground-floors in meaner houses, and for the offices in such as are better. They easily gather dirt, but they easily wash again, and when fresh cleaned they have a pretty and bright appearance. In the same manner as *Portland* paving is made with dots of black marble, a paving with these tiles, dotted with black, may be done very pretty. This will have an agreeable effect in the hall of a small country house, where a plain and rural look is affected.

The *Dutch* tiles are in a manner neglected, though they used to be in general repute about chimnies. They are indeed inferior to ordinary stone for that purpose, because of their continual falling. The joints are required to be small for the sake of beauty, and this makes the setting weak, and the continual effect of the fire destroys the force of the lime, so that they are often dropping; then their thinness is such that a small blow cracks them, and when crack'd they soon fall out.

This is the greatest defect, for it must be confessed that when entire they look very pretty. If they were made thicker, and some contrivance was used to keep them firmer, they might be worth bringing into fashion again, where the expence of marble is not allowed, for there is a particular brightness in their glazing, and nothing looks so clean: nor is this the only advantage, for they reflect the heat much better than stone.

In this case all the trouble they take about figures is ridiculous, and would be better spared; they are ill done, and the plain white are much cleaner in the look and prettier; if any thing were done by way of colour, it should be the throwing on a little blueish loosely to imitate the veining of marble.

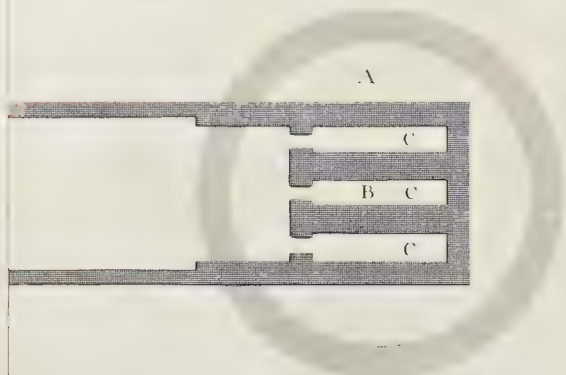
In the preceding number we gave in our fifth plate the plan and section of a *conical tile-kiln*, of the most useful and advantageous structure; we shall in this lay before the reader in our sixth plate the several parts of that useful fabrick separated, to shew its inner structure. The whole therefore being now before the eye, we shall give an account of its several uses, and the manner of burning bricks as well as tiles of various kinds in it; and add the references of explanation for both.

The kiln of the dimensions here represented burns a very large quantity together, to the great advantage of the proprietor, whose business is to sell them in great quantities. The profits of this branch of business are so great, that wherever there is proper earth, and a sufficient demand, it is extremely worth any person's while to fall into it; but beside this we propose another use in our plan and sections of the kiln, which is, that the whole being explained in such a manner that a good workman may easily bring it into execution, any gentleman who has a large edifice to erect, or his surveyor for him, may give directions for the setting up one of a smaller size, in which to burn all the needful brick and tile of every kind for the fabrick.

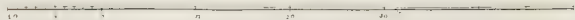
The quantity this kiln burns at once is, of tiles alone, including the three kinds of plain tiles, pantiles, and paving tiles, thirty-four thousand. This being known it will

Friedrich's 'Baumung' type & Brick.

Pl. 5.



Under Ground of the 'Tulu'



W. P. & Co. Eng.

be easy to construct a kiln of the same fabrick, and of any bigness, proportioned to the *Chap. 15.* quantity of tiles of the several kinds that will be wanted for the building.

We have before observed that bricks may be very finely, and perfectly burnt in it; and it is most worth while to use it for the best kinds. In the several kilns of this make about *London* they usually burn a large quantity of the red stocks and other valuable sorts; therefore the same may be done by such as shall set up a small one for their own use in the country.

If it happen that in preparing for any large edifice there be little occasion for tiles, slate being intended for the covering, in that case a great part of the expence may be saved, and yet the kiln answer the purpose for bricks in the most perfect manner. The lower part for this use, of burning bricks alone, should be just the same as in our plan and sections, but all the cone, or great building, above may be spared; the kiln being covered over with a slight shed, and the smoke let out at the sides. Bricks burnt in this way will be much better in proportion to the materials than those done in clamps as we see them about *London*: these being only heaps of bricks, so pil'd up as to leave room for the fuel between them.

Explanations of the two plates of the conic TILE-KILN.

PLATE V. *Shews the plan and elevation of the entire kiln.*

- A. Is the ground-plan of the whole building.
- B. The plan of the kiln.
- C. C. C. The three arches of the fire-place.
- D. A section of the conic building.
- E. A section of the kiln.
- F. The fire-place under it.
- G. The ash-pit.
- H. H. The entrances.
- I. I. The surface of the ground.
- K. A ladder leading down to the fire-place and the coal-cellar.
- L. An arched vault before the fire-place.
- M. The coal-cellar, over which are sheds for keeping the tiles.

A COMPLETE BODY

PLATE VI. *Shews the plan of the kiln, and its several parts.*

FIGURE 1.

- A. The plan.
- B. B. B. B. The four entrances.
- C. The wall of the kiln.
- D. A pav'd floor beautifully constructed, on which the tiles are laid to burn;
- E. The way down to the fire-place.
- F. A part of the pav'd floor, drawn on a larger scale. The hexagons in this figure are the bricks, and the squares are flues or openings.

FIGURE 2.

- G. A section of the kiln.
- H. The three fire-places.
- I. The ash-pits.
- K. The pavement, or floor:
- L. The several flues which run from the arches to the floor; and there end in the square holes.
- M. The doors of entrance.

FIGURE 3.

- N. A section of part of the building.
- O. The front of the kiln under ground.

The bricks of which the floor we have represented is composed, are made for this purpose: they are oblong hexagons; their length is eight inches and a half, and their breadth four and a half; by their size and figure they naturally form the pavement, which is a beautiful mosaic, and the holes.

They might be used for paving halls in country houses; and the square holes being in this case filled up with a dark-coloured glaz'd brick, would have a very pretty effect.

Nothing can be more artificially constructed than the lower part of this building, for conveying the heat regularly through the great quantity of tiles burnt at one time. The large cone of brick-work raised over it serves to receive the great body of smoke continually rising, and to keep the heat together.

fig 3



fig 2

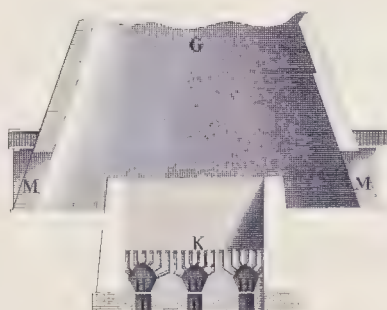
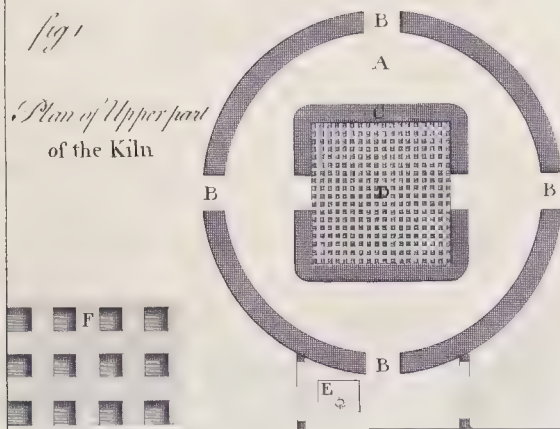


fig 1

Plan of Upper part
of the Kiln





C H A P. XVI.

Of TIMBER in general.

AFTER stone, and brick which is made in imitation of stone, and serves in its place, as tiles do in that of slate, we naturally come to the consideration of timber, the second essential in building: in many countries indeed it is the first, and in some degree has a title to that distinction in nature, because a house it may be built without stone or brick, though hardly of those without the assistance of timber.

Of timber there are a great variety of kinds, all of which have at one time or other, and one where or other, been employed in building or ornamenting of houses: but in this article the present practice has retrenched the variety more than in brick; for of all those kinds of timber, two in a manner do the whole business of the architect: these are oak and fir. They are very excellent species without doubt; and take them all in all, are much superior to any other kinds: but as we are not altogether to commend the reduction of the several sorts of brick, much less are we to allow as proper or convenient this banishing all except two kinds of timber.

There are walls now standing, in some places, of what were called great bricks, each twelve inches long, six broad, and three thick, which shew that such may be made sound and will be found serviceable; and, in the same manner, we see about old houses, various kinds of timber which have lasted excellently for a vast length of time, and very well deserve to be continued in use: of this we shall speak more largely when we come to enter on the distinct kinds.

Nature seems to have destined the two species we now use for the services to which we employ them, and to have pointed out their particular utility in their growth; the fir, which is tall and upright, being fit to bear any thing perpendicularly; and the oak, which spreads its great arms every way, being qualified for supporting weights in any direction. We shall not pretend to give the preference against the oak for strength to any other timber; but if some other kinds may be used as well, there will be convenience in the chusing them on particular occasions, and the builder ought to be acquainted with them.

There are many rules laid down respecting the felling, management, and seasoning of timber, and they are repeated through all the works of those who have written on these subjects. The English reader will smile to hear that they are all extracted from the Roman oracle *Vitruvius*: but when he sees how little the moderns have been able to add, he will also be pleased to find those rules confirmed by the experience of so many centuries.

Timber that is felled in winter will be stronger than such as has been cut when fuller of sap, as it is in the leaf and fruit season. This is a rule inviolably followed by all who have any regard to their interest or credit. A second caution given by that author is, that it be felled in the decrease of the moon: this has been laughed at, and

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supposed

Book I.

supposed an imaginary advantage, but the considerate builder, who recollects the effect the different times of the moon have upon shell-fish, and even upon our own bodies, when subject to diseases, will not reject the advice; for he will find it is not impossible the sap of trees may be influenced by the same means: he will find the concurrent testimony of many to establish the opinion, that timber is foundier and less subject to worms when felled in that time of the moon; and he will not be influenced against it by the laugh of contempt with which such an opinion is treated by some who pretend to wisdom, or the flat denial of others who confess ignorance. He will judge thus: There may be good in following the practice; there can be no harm; and therefore when I am to depend upon my timber I will observe it.

After the timber is felled it should be laid up in a dry airy place, where the sun does not come; and piled in such a manner that lying hollow the wind and air will pass freely among it, but where it may be safe from the rain. It should not be drawn to this place in the early time of the morning, when the ground is wet with dew, but when all is dry; and if it be daubed over with cow-dung, that will contribute to its drying more equally.

As to the working of it, it is best done when it is moderately fresh. If it be too wet it works easier, but will be more subject to decay; and if it be too dry, it cuts with more difficulty than need be.

These are the general heads laid down by *Vitruvius*, with respect to the felling, seasoning, and working of timber in general; to which he adds, that it is not perfectly fit for the smaller works till three years after the felling.

After giving this general idea of the nature of timber for building, we shall proceed to an examination of the two principal kinds in a particular manner, and afterwards take a view of the several others: which, although neglected at present, may be found worthy, on many occasions, to be brought into use in building.

C H A P. XVII.

Of OAK. The felling, seasoning, and choice of its timber.

AS the oak is the standard and great article of timber in building, we shall caution the architect to have the greatest regard to every thing which concerns it; and for that purpose shall begin with the tree in its growth, and as it stands: for it will be best that in great undertakings, and where there is time for preparation, that he mark out the trees as they are growing which shall serve for his timber.

As to the time of the oak's growth, perfection, and decay, the vulgar computation of an hundred years for each article is not much amiss. We have dates of several plantations by which we know this tree will continue encreasing in bulk for eighty or ninety years: we have some very sound that have been planted an hundred and sixty; and the remains of some yet alive in part, or not quite decayed, which are more than two hundred and forty. This is known to a certainty, and it goes a great way toward confirming the common opinion.

Alberti advises that all the oak for a building be cut in the same forest. This has been looked upon as an idle nicety by some, who are more ready to censure than to judge; but there is foundation for it in reason and the nature of things. Oak grows slow in clayey ground, but the timber is better than in any other; therefore oak of the same age and size, growing on different soils, is not of equal strength. It is for this reason best that it should be all from one soil; and this is most like to be the case when all comes from one forest.

As we would have the architect chuse his own timber while growing, we shall advise him to fix only upon such trees as appear healthy and vigorous: but as nothing is more deceitful than a tree while it stands, we shall here add a few cautions. Let him examine the trunk with a strict eye to see that all look even; if there be a swelling vein rising above the level of the wood, and covered by the bark, it is a mark of decay: if a branch at the head be dead it is more suspicious; and in this case he should open the earth at the root, and see the condition of that: if it appear quite sound, probably the decay of a branch is an accident; but if it be in a state of decay, the timber is to be suspected.

The best age of the oak for service, is just, or as near as can be, at the time of its arriving at its full growth. While it is encreasing, it will pay for the standing on the ground; and experiments have proved that the timber of all trees is soundest and firmest at the time of their attaining their full bigness: at best it is useless to let them stand longer; and as all trees are liable to accidents, they are most easily injured by them after this time.

In felling the oak the branches which may hurt the trunk in its fall are to be first cut off, and then it is to be cut down as near to the ground as possible, for this adds length to the main timber.

When the tree is down it is to be bark'd; and being trim'd of the branches it is to be season'd.

We have given *Vitruvius's* way, which is by leaving it thoroughly open to the air, but defended from sun and rain: in this practice the work is left to time, and as the wood dries gradually and equally, it is a very good method.

Another way is to bury it some time under ground in a dry soil: this is called ground seasoning.

A third way is what we call water seasoning, which we learned from the *Venetians*. They sink their oak two or three years under water before they use it; and no method better prevents the splitting. The *Venetians* do this with whole trunks of oak, and allow such a length of time; we frequently practise it on oak sawn into planks, allowing only a fortnight or three weeks soaking.

It is found that split pieces of timber are not so apt to crack as the entire ones; and even that which is only squared escapes better than such as is left round. This splitting in trees begins in the inner part, and widens outward; the workmen call it splitting from the heart: they find that boring the timber, when it is for posts or columns, prevents this better than any other practice; but after all the care it is so liable to crack when thus used entire, that they prefer columns made of pieces glew'd together. In general oak is most subject to split when it is in its natural state, and is less liable to this as it is more and more wrought.

We have cautioned the builder in what manner to chuse his trees standing; we are next to suppose him a purchaser of the timber as he finds it. In this case, to know its strength and value let him examine its weight and grain. In order to judge from the weight he must have some knowledge of its condition as to dryness, but that an experienced eye will distinguish easily; and supposing that equal in two pieces of timber, that will always be found strongest which is heaviest. For most purposes that oak is best which has the evenest and most regular grain. There are some cross-grain'd pieces which for strength exceed all others: these are principally the trunks of oaks that grow upon barren commons; and for posts, and other coarse occasions, where a vast weight is to be supported, nothing is like them.

Oak under its maturity is to be chosen for purposes of strength rather than such as has stood beyond its time of full growth, for it is tougher while it is acquiring its size than afterwards. Old oak timber is lighter than such as has been cut at a somewhat earlier time, and it is more brittle, which is the first approach toward decay. The weight and toughness are therefore articles of vast consideration in the choice of this timber.

C H A P. XVIII.

Of FIR. Its growth, nature, and qualities.

THE fir is a tree much quicker in its growth than the oak, and sooner comes to decay. The hasty growing trees in general are the shortest liv'd: there requires time to the formation of a sound and firm wood; but when form'd we see that, whether consider'd in the living tree, or in the duration in work, it very well answers in value to the time required for its production.

The fir is not a native of this country as the oak, so that the builder seldom has an opportunity of chusing the trees as they stand; we shall therefore confine our observations on this head to the timber as we see it imported: but it may not be amiss to observe here that the fir, although not a native of *England*, will thrive here very well; that it has been planted in many places, and grows to a great height and excellence; and that it is exceedingly worth while to raise it for use in our own country. The climate whence we import this timber is very little different from our own; it there grows on the most bleak and barren mountains, and we have hills enough of this kind at present that produce very little to the owner: we find the tree will thrive with us, and we know the demand for its timber is great and is certain; what therefore can be more advisable than to try the success of plantations?

As to the time of felling firs, it does not at present concern us; nor is there any occasion for such care in the seasoning, for it is not of the nature of the oak to spoil for want of this method of preserving; nor is it intended for such purposes of strength that so much caution is necessary. The juice of the oak is watery, and that of the fir is resinous; this makes a great difference in their nature and qualities: the juices of the fir preserving the timber, while those of the oak are more subject to decay in it, and produce worms and rottenness.

It is to this resinous nature in the juice that the fir owes its great duration, for otherwise it is so light a wood, that it would soon perish: we see those of the same or like texture of our own growth whose juices are watery, last a very little time, while this is of great continuance.

The fir is ready for use in a much shorter time than the oak after felling, and whether laid upon the ground, or floated on the water, it keeps strong and fit for service. If it have less strength than the oak, it is also cheaper, and requires less care and less trouble in preparing, and works with incomparably greater ease: and if it be not employed for so great and essential purposes, it answers more, and at less expence.

A COMPLETE BODY

C H A P. XIX.

Of the uses of OAK and FIR in Buildings.

NO tree affords materials for so many purposes as the oak, but we have to do with those only which concern the builder. The crooked pieces are serviceable for coarse and strong work, and the smallest fragments will be of some price for rails, laths, and even down to the pegs for tiling: so that as there is no timber so valuable as the oak for large and important services, there is not the least piece of it while found, but is of some use and answers some purpose to the builder. The oak is therefore, of all kinds of timber, the most universal; and it exceeds all others in strength, solidity, and soundness, and consequently in duration.

No wood whatsoever supports such weights; none bears the injuries of weather like it; and even fire affects it much more slowly than other timber.

Oak is the timber which the builder should always use for the substantial parts, and where most stress is laid. Where it happens that a part of the work is to be subject to the injuries of water in the worst way of all, that is, sometimes wet and sometimes dry, there is no timber that endures this trial like the oak, nor in articles of importance is there any other that can be trusted in such circumstances.

We have observed that for coarse purposes rough posts of oak will serve; but for the general use in good and elegant buildings, the straightest, finest, and evenest pieces of this timber are to be always chosen. The timber of roofs and joists of floors are in a manner everlasting when made of good oak; and no wood is equal to it in door-cases and for window-frames. When properly employed in framing or building, it holds for such a time as few would imagine. We see instances of this in many of the old framed houses; in which the knowledge of geometry has enabled the builders to give them a prodigious strength with a moderate quantity of materials.

Beams should always be of oak where great strength is expected or required. The flooring of barns should be with two inch oak plank, for the most perfect strength and service: it is a custom with many to lay them with two inch deals, and oak joists, but they are not comparable: and the excellence of the oak for weather-boarding is the same.

For stairs it is greatly preferable to any other wood; and it has the same preference in posts, joists, and girders, and in general wheresoever strength is required under any form.

FIR, although of very inferior quality to oak, is yet a very universal timber in building; and as it is cheap, and works easy, since the use of paint has become so frequent, it has in a manner superseded all other kinds. Wainscoting was at one time done with oak, and doors were made of cedar; other ornamental parts also were of wood of different kinds: but it is all one what is the wood when it is covered with paint, so that deal be-

ing cheap and working easy, has taken the place of all the others in general in this re-
spect; and is on many occasions used where indeed oak would do better. Chap. 20.

There are few of the purposes before-named, for which we have so much commended oak, but deal is in ordinary buildings made to answer in its place. Roofs are framed with fir, and door-frames are made of it; it serves for the purpose of weatherboarding rough and feather-edged; and doors, dressers, and other ornamental and useful parts in a house are wrought in it: the oak would in most of these cases very well pay the difference of price by its lasting; and for others elm is preferable.

The carvers used to have oak for their material, but at present we are got into a slighter way of working, and deal answers the purpose. We admire those pieces of ancient carving in which the chisel has been so boldly and so happily employed, but those who admire do not attempt to imitate them. Deal would not well have supported the tender work in use at that time, but it very well answers for that which is fashionable at present; and as we now paint or gild all carved work, one kind of wood does as well in it as another.

In this short view of the uses of the fir, we see that it is become almost the universal timber: it often supplies the place of all other kinds. Where its strength is not sufficient oak is called in, and we look no farther: in other parts of the fabric all that we see is deal, and we find it answers very well on the generality of those occasions.

C H A P. XX.

Of several kinds of Timber worthy to be used in building.

CUSTOM has received the two kinds of timber, oak and fir, in the place of all others; but there is no reason that custom should, in this case, be a law to those whose convenience it may suit rather to use different kinds. In and about London, they may be preferred, not only on account of their excellence, but because they are always ready for the purchaser, who would not know where to procure the other kinds if he approved them; but in the country the farmer may often want to build his barn, or repair his house, and the gentleman to raise his whole fabric, with the timber from his own land, though little oak, and no fir, grow there. It would be hard if, out of a variety of kinds he has at hand, none would serve, and that he must purchase; but we shall shew him that he is not under any such necessity, by pointing out the strength, service, and uses, of the other kinds which are of English growth.

The architect in general will do well also to take this addition to his materials into his consideration: for he will find it advantageous on many occasions to break in upon the present practice by reviving the old; and to use several of the other species of timber which our woods and plantations afford, in the place sometimes of the oak, and often of the fir, among that variety of purposes which they are made to serve.

We are not about to prefer any timber to oak in strength, for that were ridiculous; but the oak is of slow growth, and it may be useful to supply its place on many

Book I. many occasions with wood that comes more speedily to perfection. Its duration is often wanted where its great strength might be dispensed with, and on this occasion it may be proper to use in its stead some other wood, if such as is answerable may be found, as we shall shew that it may, at home: strength generally implies weight, and where we want only the duration of oak, and can find a lighter wood that possesses that quality in the same degree, it will be prudent not to load the building where there is not a necessity.

Where people do not chuse the price of oak they frequently have recourse to fir, but if there were other species in readiness they would not always single out that kind, for there are many that excel it in different particulars, which make them fitter for certain purposes.

At present we have no medium between the oak and the fir, whose several strengths are so exceedingly different that there may be many degrees between them: there are all these degrees in nature, and our own plantations supply a variety of kinds of timber that answer to them; we are therefore vastly to blame that we do not take in their assistance.

Although it might appear from our using only two kinds of wood in building that there was little variety in the nature of those occasions on which it is required, yet there is in reality a great deal. Every purpose for which timber is demanded requires some particular quality in it, and these purposes are the more or less perfectly answered, as one or other of our two kinds have those qualities in more or less perfection: but though these two cannot be suited so well as might be wished to all uses and occasions, some one or more among that variety of kinds nature affords us at home are perfectly suited to each of them; and it would be every way advantageous that they should be used accordingly. We do not attempt so idle a thing as the setting aside the use of either of these kinds so generally employed; on the contrary, we are sensible they excel any other two that could be named: but what we would advise is their taking in other species occasionally to their assistance. We would leave them the preference in many, nay in most things for which they are used at present; but as nature offers many others by which some of those many purposes would be better answered, we would propose the using such on those occasions.

That the builder who has inclination to take into the service of his profession these several farther assistances offered by nature in the variety of the *English* timber, may see at one view what is within his command, and what are the kinds best suited to particular services, we shall add a table of the principal species, with their propagation, nature, and qualities.

C H A P. XXI.

A TABLE of *useful* TIMBER TREES, *the growth of* ENGLAND.

ELM thrives on a loamy soil, is raised by layers, and is of tolerably quick growth : the timber is strong and sound, but of a rough grain : it will serve for many coarse purposes, and very durable. It is fit for beams, posts, and water-pipes, but it must be always wet or always dry, for it does not bear changes in this respect : dressers, and other necessary things about a house, are better made of elm than any other wood.

ASPEN grows best in a light rich mould, and is raised from seed : it is of very quick growth, and the timber is tough, strong, and durable, if kept dry : no wood is fitter for many purposes of strength.

BEECH grows best in a dry warm soil ; and is raised from seed. It grows moderately quick, and its timber is sound, firm, and has a fine even grain : it is less liable to split than any wood whatever.

POPULAR is of several kinds : the white, the black, and aspen : they are all very quick growers, and love damp soils. The timber is light but not strong : it has however many good qualities : none requires so little seasoning, for none starts so little : it is of a fine white colour and beautiful grain, and is therefore fit for many purposes in the inner part of buildings. The timber of the black is somewhat firmer than the white, and the aspen than either ; but they are all of this kind.

SYCAMORE thrives on a light moist earth, and is raised from seeds. It grows quick, and the timber is white and of a very beautiful grain. It resembles that of the poplar, but has more strength. There are old houses in the country floored with sycamore, and wainscotted with poplar : the wainscot never has been painted, but retains a good colour, and floors stand excellently and are very pretty.

The LIME tree grows best in a rich loamy earth, and is raised by layers : it is moderately quick in its growth, and the timber is white and has a very even grain, but it is liable to split ; it may however be serviceable for many kinds of inside work, and particularly is excellent for carving ; much superior to deal and to most other woods.

WALNUT succeeds best in a sandy loam, and is raised by sowing the nut : it grows slowly, but the value of its timber is very great. The fine veined pieces are to be reserved for cabinet makers, because of the price they bear, but the rest is of great value in building. The French use walnut as we do oak, and it answers very well ; for it is firm, sound, strong to bear weights, and very durable.

CHESTNUT loves a dry warm soil, but is not very speedy in its growth. It is raised by sowing the fruit, and the timber is very sound, strong and durable. It was
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Book I. at one time used in the substantial part of buildings, and in old houses it is often mistaken for oak, even by good workmen, it so greatly resembles it in colour, and substance, and in its qualities. It does not bear to be wet and dry at times; but entirely wet or entirely dry, it will last without end. It may supply the place of oak on most occasions.

SERVICE does best on a tough firm loam: it is raised from seed, and grows quick: the timber is firm and beautifully veined. It would answer excellently for doors, and other ornamental purposes.

QUICKBEAM grows best in a light dry loam, is raised from seeds, and the timber is strong though light. It is a quick grower, and should be felled at about five and twenty years, at which time the wood will be fit for many purposes in the inside work in buildings, cutting easily and having a fine grain.

HORNBEAM grows best on a poor soil, and is raised from layers: the growth is slow, but the timber is very sound, firm and hard: it has a coarse grain but great strength: and may be used in the coarser parts of buildings.

MAPLE thrives best in a rich mellow soil, and is raised from layers: it grows tolerably quick, and with proper management will make a handsome tree. The timber is sound, firm, strong, and very beautiful: its grain is exceedingly close, and it is often beautifully veined. It would answer excellently for the finest of the inside work in buildings, and would be serviceable on many of the more substantial occasions.

CHERRY TREE grows best in a rich loam, and is raised by layers: its growth is tolerably quick; and, when not spoiled in shape by the tricks of nurserymen, it makes a large tree: the timber is very firm and very beautiful, and may be used both in the inside and outside work of buildings with great advantage: it is equal to almost any timber, except the oak, in strength and durability; and, when managed in the way of mahogany, has a handsome appearance. It is idle to attempt, as some do, to pass it for mahogany; but every one will allow it to be a beautiful wood; and it bears working as successfully as any.

PEAR TREE. The wild, or hedge pear tree, rises to the best timber. It is raised from layers, and will live in any soil. It grows moderately quick, and its timber is strong and fine: it is of a close and delicate grain, and beautiful colour: its strength recommends it, on many occasions, to supply the place of oak; its firmness and beauty also plead greatly for admitting it into the more delicate parts: no wood cuts better into boards, nor does any suit more excellently for ornaments by carving.

ALDER grows any where near water, and is raised from layers, or by sticking pieces in the ground. It may be trained up to a good thickness, and bears standing continually in water as well as any wood whatsoever. Some have written that, being put in water, it hardens by degrees into a stone: but that is false. It continues firm and good for a vast while, and that is a sufficient recommendation.

SALLOW grows best in a loamy damp soil, and is raised by layers. It grows very quick, and with care may be trained to a good sized tree. The timber is very tough

and strong, and is surprisngly lasting. It must be used only where it can stand dry; Chap. 22. but in that case it is as durable as oak.

Yew grows best on barren hills, and might be planted to great advantage in many waste grounds. It is raised from the berry, and though it grows slow, makes amends in the quality of the timber, which is extremely tough and strong, and of a beautiful grain and fine colour. The more irregular pieces might be used in the coarser works, and the beautiful planks of it would be worthy to be introduced into the finest of the ornamental parts of the most elegant building, where it would be as lasting as beautiful.

We say nothing of the former woods, their qualities being sufficiently known; but have enumerated these to give the builder a view of what a variety of useful materials he leaves neglected. We do not take upon us to dictate in what kind of service each should be employed. We have named their qualities, by which it will be seen for what they are fit; and we leave the application to his own judgment and discretion.

C H A P. XXII.

Of LIME.

WE have taken a view of the two great species of materials used in building; stone and timber: we have considered their qualities, and laid down their nature in their separate state, and shall now proceed towards their use in erecting edifices, by entering upon the nature of those things which connect, cement, and fasten them together.

With respect to stone, this office is supplied by mortar; in timber it is assisted by nails and other implements of metal. We treated first in order of stones, and shall therefore first enter upon the nature of the matter which connects them; this being mortar, its principal ingredients are lime and sand, and these we shall consider in two distinct chapters.

Lime is made of a great many different materials, and according to their qualities and nature it is better or worse, stronger or weaker. It may be made of stone, of chalk, or of shells; but this is a general rule, that the harder the stone the better the lime: therefore that which is made of rock is best, that of chalk inferior, and that of shells worst.

Some have pretended to describe the limestone as if it were a distinct species of rock, but that is idle. Every stone that will ferment with an acid, such as aqua fortis, will make good lime; and the more sound and solid it be the better.

In *England*, our best stones for this use are bluish or redish. In *Italy*, where marble is plentiful and cheap, they burn that into lime; and many other kinds are used in different places.

We

Book I. We have observed already, that the nicety of burning lime from the same stone that is used in the building need not be observed; but many have with reason taken notice that it is a great damage to the *English* buildings that the architects are so careless in the matter of which it is made.

We advise the builder therefore who is to undertake any considerable structure, to look carefully to the working of his lime. Let him see that it be burnt from a sound, firm, and weighty stone, and such as upon the dropping a little aqua fortis on it sends up a large quantity of bubbles. Let him take care that it be uniform in its structure, at least that there be no lumps of different matter among it, which is often the case; if there be, let him try whether they ferment with the acid, and if they do not, let them utterly reject such pieces.

Lime stone is best when broken from large rocks or beds, which lie in the sides of hills; and the lime will be strongest which is made from such stone as is newly taken up, not such as has been exposed first sometime to the air. Lime-stone alters exceedingly on lying above the ground; and it loses that very matter which gives it firmness in the lime.

It is for this reason that stones to make lime are always better dug than picked up on the surface, as *Palladio* justly observes; and, for the same cause, such as have some moisture while in the pit; for those which are utterly dry, are, in a manner, in the same condition with those that have lain exposed to the air.

If there be not a sufficient supply of proper materials for good lime of the strongest kind, let the builder make as much as he can of the best materials, and a quantity also of an inferior sort, from chalk or from worse stones: let him keep this inferior kind for inside work, for it will be as white as the other, all that it wants is strength; and let him use the other wherever he has a dependance upon it for firmness.

Among the many idle things we have affected to copy from the *Chinese*, one was their lime: this is made of sea-shells only, and it is a white and elegant kind, but of no strength or service in this climate.

Sound and firm lime-stone requires about sixty hours, with a good fire well regulated, to burn it into lime; and it loses about one third of its weight in the burning.

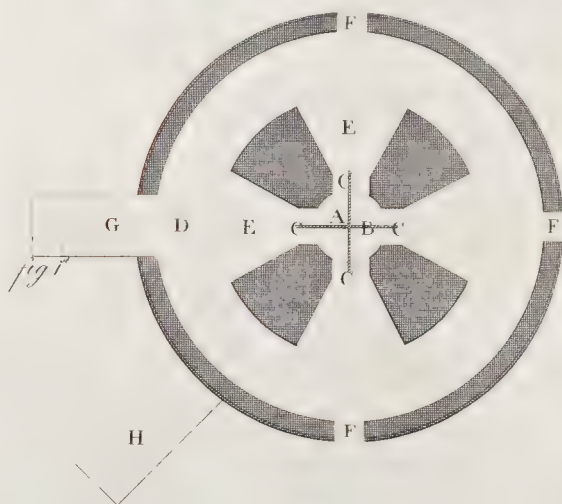
To examine into the value of lime when burnt, we must observe its colour and soundness: the whitest is the best; and if upon striking it against a stone it sounds, it is proof that it is strong and good. The weight also is a consideration, in this matter the lighter the lime is the better; and we are to observe how it flakes. The best is that which requires most water to flake it; and in wetting, the more it smokes the better; it ought also to stick to the sides of the vessel in which it is flaked for trial, and the more firmly it does this, the better it may be expected to endure in the building.

As to the degree of burning, the nature of the stone must determine that: we are sensible sixty hours will appear a great while according to the modern practice; but

fig 3.



fig 2.



1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 100

101 102 103 104 105 106 107 108 109 110 111 112 113 114 115 116 117 118 119 120 121 122 123 124 125 126 127 128 129 130 131 132 133 134 135 136 137 138 139 140 141 142 143 144 145 146 147 148 149 150 151 152 153 154 155 156 157 158 159 160 161 162 163 164 165 166 167 168 169 170 171 172 173 174 175 176 177 178 179 180 181 182 183 184 185 186 187 188 189 190 191 192 193 194 195 196 197 198 199 200

where perfectly good stone is used less is not sufficient; and this is the time directed by Chap. 23.
all the masters in the science.

Too much care cannot be taken on this head; for the best materials, with bad mortar, will never raise a durable fabric. We see, in the old buildings, mortar become as hard as the very stones, and we say that it acquires this strength and firmness from the air. It is true that it does, but there requires a choice in the lime of which it is made, otherwise the air, instead of hardening, will quickly moulder it to powder. We see this every day in buildings wherein bad lime has been used, as we see the contrary effect where there has been a proper choice in this material.

To give the reader a distinct idea of the manner of burning lime, we have, in *Plate VII.* given a plan and two sections of the kiln most convenient to this purpose.

FIGURE 1. *The PLAN.*

- A. The fire-place.
- B. Two bars laid occasionally over the apertures 'C. C. C. C.' and supported by loose bricks, one of which is taken out occasionally for the lighting of the fire.
- C. C. C. C. The four apertures in which the bars are supported.
- D. A passage of three foot and a half wide round the kiln.
- E. Recesses where the workmen come to rake out the lime.
- F. F. F. Three windows level with the ground.
- G. The steps down to the kiln.
- H. A flight of steps going to the top, where they put in the lime-stone.

FIGURE 2. *A section of the entire kiln through the middle.*

- I. The cone, in which the materials and fuel are put.
- K. One of the bars, marked B in the plan.

On this, and the other bar, they lay first faggots, then coals upon them, and afterwards the lime-stone and fuel, in beds, one above another.

This they carry to the height of about four foot at first, and afterwards removing the bars, they draw out the lime in the recesses, marked E in the plan, supplying more fuel and more materials at the top as long as any more lime is required.

- L. L. The passages, marked D. D. in the plan.
- M. M. The walls of the recesses E. E. in the plan.
- N. One of the windows answering to F. in the plan.

FIGURE 3. *A section shewing the front of the kiln below and the passage round it.*

O. One of the recesses, E. in the plan, where the lime is raked out.

P.P. The passage, marked D. in the plan.

C H A P. XXIII.

Of preserving LIME, and making it into MORTAR.

AS the lime is always best when the stone is carried immediately from the rock to the kiln, and burnt as soon as dug; so the mortar is always best when the lime is flaked immediately on its coming out of the kiln.

The reason of this is evident, for the lime has at no other time so much strength: the air taking an effect upon it which is in a greater or less degree flaking; for in time it will be thoroughly flaked by the air, and fall to a weak powder. But it is not always convenient to work up the lime as soon as burnt; sometimes it is needful to keep it a long time; and finally, there are certain purposes which it never answers so well as when it has been thus preserved.

When lime is to be preserved only a little time after the burning for convenience of any kind, no more is required than to keep it dry; but when it is to be preserved longer more caution is needful. For this purpose let a pit be dug in the ground, and over this a vessel set, as for making mortar, with a hole stopped so as it may be opened at pleasure its bottom: let the lime be flaked and worked up in this vessel, and then opening the hole let it run into the pit; as soon as the pit is filled let it be covered up with a good coat of sand, and thus it will be kept moist and fresh.

Another method is to cover up a quantity of fresh lime with a yard thickness of sand, and then pour on as much water as will flake it, but not reduce it to dust. If the sand crack, and the smook rises through the openings, close them up, and keep all fast and without vent: the lime will be thus preserved ever so long, and will acquire a new value, by the time of its lying: it will be more tough and clammy than any other kind, and less free to shoot out its salts when worked. No lime is so proper as this for inside work, where great nicety is required, and none is so fit for painting upon, because it will not destroy the colours.

MORTAR is made of a mixture of lime, sand, and water; other ingredients are added occasionally for particular purposes: but this is plain mortar, and is the foundation of the different kinds.

We have advised the builder to be very careful in the choice of his stone for lime, and very nice in his examination of it after it is burnt: he will by that care be sure to furnish

furnish himself with good lime; but if he stops there he may have very bad mortar. Sand and water are common ingredients, and to the careless eye there may seem Chap. 23. little difference in the several kinds of the one, or it may be imagined the variations of the other are of no great consequence. But this is an error: every little particular is to be regarded in a great work, and there are differences in both these articles which may so far influence the composition of the mortar, as to render the best choice, and greatest care about the lime ineffectual.

A judicious person who sets about making mortar, will wish to have nothing in it but what he intends; he will therefore take care that the sand be pure, and the water clear, otherwise whatever foulness either of them has, it carries so much of some matter not intended into the mortar.

Our people are very careless in both these particulars, and they are very faulty in that neglect. They take their sand from the first pit, and their water often from the nearest kennel. It must grieve a person, who knows the importance of these articles, to see such a slovenly negligence in respect of them in preparations for the greatest and the most eminent structures.

C H A P. XXIV.

Of the various kinds of SAND.

RIVER sand is better than pit sand, because it is cleaner, otherwise there is no difference: for this reason, where river sand of a proper kind can be had, it is to be preferred, otherwise pit sand is to be well washed, and it comes to the same thing. River sand is no other than sand washed out of the banks or bottom, from which any earthy matter that was among it originally has been carried off by the course of the water: therefore pit sand may be made the same by the same method; that is, by washing it in water.

Very little sand is perfectly clean as it lies in the earth; therefore, when pit sand is to be used, let it be well pumped upon till the water which will be at first yellow, white, or muddy, runs off, after ever so much stirring, as clear as it was put on; the sand being then examined will be found to look clean and bright, like that of rivers; and it is to all intents and purposes the same.

Next to the cleanness of the sand, let the builder take care of the cleanness and condition of his water. Dirty water always weakens the mortar, because it carries mud into it, which has no strength nor any business in the composition. Spring is not so good for making mortar as river water, but the best of all is that taken from a clear pond: if it be set in the sun for some hours before it is used, or a quantity made hot and mixed with the rest, that all may be warm, it will flake the lime the more readily and perfectly: this depends upon a very well established principle, which is, that soft water flakes lime better than hard; and hot water more perfectly and more readily than cold.

The

Book I. The quality of the sand is also a very great article. There is some that is soft and fine like dust: this is the worst of all. The proper kind for a strong mortar is a large, coarse, clean looking sand, of a yellowish colour, and such as hurts the hands when rubbed between them.

The care the antients took in these small particulars was the occasion of the vast strength and duration of their works: if we will at this time use the same precautions, we shall, like them, work for the admiration of succeeding ages. Mortar thus made will acquire that hardness we find in theirs, which is equal to the brick and stone that it cements, by the effect of the air; while the very same means reduce the common ill made mortar to powder, and destroy every thing about it.

Palladio observes that a larger quantity of pit sand is needful in mortar than of river sand, but when the pit sand is washed it becomes altogether the same in its nature, and is to be used in the same proportion.

The advice of this author, and the practice of our builders, differ greatly with respect to the quantity of sand that is to be used in this mixture. He orders three times the quantity of lime if it be pit sand, and twice the quantity if river or sea sand; and the common practice at this time allows less than a third part; more in some places; and in others they are made equal.

To speak from experience and the result of many trials, it seems that *Palladio's* proportion of sand is too great, at least for mortar to be used in our climate, and that what we commonly allow is too little. The medium perhaps will be best, and if any general rule may be laid down, it should perhaps be that two thirds of lime and one of sand would be the best quantities.

Palladio sets sea sand and river sand upon a level in point of goodness, and seems to be indifferent as to their use; but it has been found that sea sand does not succeed so well as the other. The reason is plain enough, for there is salt in sea sand which imbibes the moisture of the air to the damage of the whole; we have observed that nothing should be suffered to come into mortar but what is intended in the composition; salt is not intended, but it will always hang about sea sand, and therefore river sand is better.

We have observed that a coarse yellow sand is best for mortar; but by this we must not be understood to exclude those of other colours, for that article is quite indifferent. All genuine sand is a crystalline matter formed into little grains, and tinged more or less to one colour or other, but which signifies nothing. White sand is condemned by some of the antient writers, but this must be properly explained, for what is true in one country does not hold good in another. The writers who condemn white sand wrote in *Italy*; in that country there is abundance of a white matter in form of sand, but really composed of small fragments of marble; this lies about the marble quarries, and is washed into the beds of rivers, and this which from its being in form of powder, is called sand by those who do not observe the distinction, must needs be of a very improper nature for mortar.

We

We have said that sand is of a crystalline nature ; this is not in the least so, but calcareous : it is too much of the nature of the lime itself to answer the purposes of the intended mixture. It ferments with acids in the same manner as lime-stone, and might be burnt like it into lime, whereas the other is not affected by the acid, nor can be reduced to the condition of lime by fire. Chap. 25.

This is the white sand that the *Italian* writers object to, and that the builders in that country refuse to use in mortar : we have none of it in *England* ; our white sand is the same with the yellow in all respects but colour. In *Buckinghamshire* the white writing sand is so common that they use it on all occasions as the other : among the rest they mix it with lime for the making of mortar, and it serves as well as any other.

We may understand by the account the *Italian* architects give of their white sand, that this is the occasion of their rejecting it ; they do not say it is because of the colour, for they were too judicious to regard such trivial circumstances ; they tell us it was softer, and that is a real cause of its being inferior to common sand.

They have one kind of sand in *Italy* which the old authors praise extremely, and that with reason : it is found at this time at *Puzzoli*, the old *Puteoli*, and hardens under water. This is a very substantial recommendation of it for buildings that are exposed to that element, and it is found vastly superior to all other for such purposes. It is a pale coloured sand, less harsh than the common kinds, though composed of large particles ; and it contains a kind of native plaister stone, which has, without burning, the same effect as plaister of *Paris* has when prepared. We say without burning, because it is not calcined by any human means ; but these are places full of hot springs and hot vapours, and probably that effect is produced by fires burning naturally under ground. *De L'Orme* has a very singular observation with respect to this *Puzzoli* or *Puteolan* powder : he says, that the mortar in which it is used in a manner calcines flints, turning them white throughout their whole substance. This is a very wonderful effect ; but he seems to speak of it with the assurance of one who knows it to be true.

C H A P. XXV.

Of mixing up the MORTAR.

WHEN the ingredients of mortar are carefully chosen, the lime sound and fresh, the sand clean and sharp, and the water soft and pure, there remains another consideration in which the ancients were very careful, and we are very remiss and negligent ; that is, the mixing them well together. We affect to wonder at the strength of their cements, and some have pretended to explain it by a supposed addition of many ingredients ; but when we compare their practice and ours in this light, we shall see there need be no recourse to such a solution, but that all is easily accounted for without it. The ingredients were the same in their time and in ours, for we know it by their writings, but they selected and picked them carefully, and were at vast

Book I. pains in blending them together, whereas we are negligent in one respect and idle in the other.

Our people throw in a great deal of water and then a little labour does; the antients mixed all by little and little, and might be very well said, in the language of the *French* proverb, to dilute their mortar with the sweat of their brows. They employed a great number of labourers, who constantly worked together upon the same quantity of mortar for many days; and it was this which blended every part of it so thoroughly together that when it united it hardened into a stone. There are remains of this old mortar yet among the ruins, and when pieces of any size are taken off, they bear a polish equal to marble.

We name these circumstances, and confirm them by these instances, to spirit up our builders to have more pains taken with that great article mortar: they may make such as the antients did if they will take the pains the antients took to do it.

Hair is on some occasions mixed in mortar; and, for certain purposes, it is worked up with oil instead of water: there are also many other particularities of which we shall treat in their place; but to speak in general here of the materials, and the manner of connecting them, we cannot omit to oppose against the slight and inconsiderate practice of the present time, that careful, exact, and laborious manner in which the *Greeks* and *Romans* caused it to be done, and by which they gave their mortar that power of hardening by time, which we have been very apt to admire and envy, but too little careful to understand or imitate.

C H A P. XXVI.

Of LEAD.

LEAD serves to a variety of purposes in building; and it is fit the architect should be fully acquainted with its nature and qualities. It is the produce of most parts of the world: in *England* we have a great deal of it, and often there is silver, in large quantities, mixed with it in the ore.

Though lead be very common in *England* in the ore, it is neither here, nor elsewhere, found pure or naturally in its perfect state. Pieces of native lead have been said to be found in many places, and such things are even preserved by name in the catalogues of cabinets; but what has been usually mistaken for native lead is, in reality, a kind of ore of silver, blackish and malleable.

Common lead ore is bright and bluish, and has very much the aspect of the metal. No metal whatsoever is more easily separated or purified; but the operation, though easy, is destructive in its consequences, the vapour of lead being very pernicious. The cattle are often killed in the neighbouring pastures, and the trees all about have a sickly aspect. The workmen also feel the effects of it in terrible diseases; and, at the end, death, in the plumbers, who work the pure metal only, are not altogether free from the same inconveniences.

Lead

Lead is sent from the furnaces at the lead-works in large lumps called pigs: the Chap. 26;
 plumbers receive it in this form, and they run and work it into several others. The
 principal of these are sheets, pipes, and canes.

Sheet lead is of two kinds made by casting; and a third which from the nature of the process is called milled lead. The two kinds of sheet lead differ in thickness, and are cast in various manners; the milled lead is the thinnest of all. The thicker kind, or common sheet lead, is made by casting upon a table: the pig lead is melted in a large furnace; the table which is placed very near it is eighteen or twenty foot long, with a rising edge all about, and it is covered with fine sand: this is pressed and beat, and then smoothed down, and the lead from the furnace is run over it. The thickness of the sheet is determined by the space left between a part of the engine which spreads it, and the surface of the sand: this engine, which is called a rake, bears upon the edges of the table, and comes within a regular and small distance of the sand.

The thin sheet lead is cast upon a linnen cloth, spread over a woollen one, which is stretched upon a proper table. The linnen cloth answers the purpose of the sand, and they know the lead will not burn it, when it will not set fire to paper. In this case the thinness of the sheet of lead depends upon the quickness with which the rake is drawn along the table,

Mill'd lead is thinner and smoother on the surface than this; but though it has an advantage in aspect, it is the worst of all the kinds for service. Its great fault is its weakness, and this is owing to its being so exceedingly thin: it looks very fit for use, but when it comes to be exposed to the air it cracks and shrinks, and by no means answers the purpose of keeping out the weather, or preserving the building.

The common sheet lead is used in covering churches and large buildings: the thinner kind is often employed also for the same purpose; and it is used also between the large stones instead of mortar in some magnificent buildings.

Pipes of lead are made two ways; by casting in a mould, or by bending a piece of sheet lead, and foldering it. The mould for casting them is commonly of brass, and has a core of iron supported loose in the middle of it, at such distance from the inside of the mould as is to be the thickness of the pipe. In the way of making them by foldering they have cores of wood of a proper thickness, round which they roll a piece of sheet lead, and bringing the edges together, join them with solder, which is a mixture of two parts lead, and one part tin, that metal melting more readily than lead.

The canes of lead are made for the glazier's mill, in which they are wrought into a flat form with a groove on each side: this, when finished, they use for joining the pains or quarries of glass in ordinary windows.

There has been an opinion that lead grows heavier when exposed long to the air; and a celebrated *English* writer urged as an instance of this, that in buildings covered with this metal they are obliged after a time to take off the lead and put tiles, because it is grown too heavy for the rafters. 'Tis thus philosophers argue: a builder would have told him it was the rafters that grew too weak for the lead, and not the lead that

Book I. so encreased in weight as to become too heavy for them. Wood will decay and lose its strength, but the imagination that lead grows heavier is altogether fanciful.

The principal use of sheet lead to the architect is in the covering large and strong buildings; there is a great deal of difference in the thickness of the sheet which ought to be proportioned to the supports and to the massyness of the building: the difference is in general from seven to twelve pound weight the foot square, and this makes a vast variation as well in the price to the owner, as to the load laid on the building.

Pipes are used for a variety of occasions; and cisterns are made by casting; these as well as the pipes are paid for by weight, as is also the covering of gutters, and works of plain lead on other such offices. Sash weights are sold by the hundred as the larger things, and the soldering the joints of water-pipes is paid for according to the diameter of the pipe.

Beside these, which are the great and essential uses of lead, it serves for several others in the builder's profession, as the fastening of iron-work in the cavities of stones, which can no other way be firmly united: for these and all other accidental purposes it is paid for at a certain rate, by weight, when the work is little; but when the trouble is considerable, and the quantity of the lead employed is less, allowance is made accordingly.

C H A P. XXVII.

Of IRON.

IRON is useful to the builder in an equal degree with lead, and the finish comes in upon the same footing with the plumber to the service of architecture: he is even required on a greater number and variety of occasions.

Iron, of which the common affairs of life require so continual assistance, is, like lead, found in almost every quarter of the world. It is indeed much more universal than that metal, there being scarce any earthy substance out of which it may not be obtained in a greater or lesser quantity; and scarce any large extent of ground any where in which there are not rich ores of it to be found, often at the surface. In this we see the care of providence: those metals which serve our necessary purposes are common, and produced every where, while gold and silver, the instruments of luxury, are met with only in a few particular places.

Though iron be, like lead, very common, yet it is not found any where native in its pure and perfect state, any more than lead, but must always be obtained from its ore by the help of furnaces, and violent fires. As there have been pretences of native lead, so we hear also of native iron; but what is called by that name, whether by the vulgar or the philosophers, is always either some rich ore of iron which will not bear hammering, and therefore, though a rich ore, is not a piece of the pure metal; or it is a piece of some iron instrument lost and buried in the earth, and afterwards taken up, and supposed native iron.

The form in which iron ore appears is various, but usually it is a reddish or iron-coloured stone. From this it is obtained by the means of fierce fires, and vast furnaces, in form of what is called pig iron or cast iron, and this is afterwards hammered at the forges near the mines into bar iron, in which condition it is ready for any service, and is wrought by the smith into any form. In the forest of *Dean in Gloucestershire*, where there are great iron-works, they mix with the fresh ore the slags or cinders of former workmen, which lie in vast heaps about the places where the works have antiently been, and by this mixture they make a tougher and better iron than they could produce at once from the ore alone. It has been pretended that these slags, which plainly contain a great deal of iron, have been impregnated by the air with that metal since they were exhausted, and thrown by out of the former works; but the truth is that the former workmen did not exhaust them of the metal so thoroughly as they might have done, either because they did not understand their business so well as ours, or because having a greater plenty of ore they did not work so close; for certainly these slags have no more iron in them now, than they had when those people left them.

In casting of iron, there is a bed of sand before the mouth of the furnace, in which they hollow out a kind of moulds, according to the figure and size of the pieces they intend; and the violence of the heat is so great, that when the melted iron is let out, it not only runs freely to these moulds, but continues liquid some time when it is in them, boiling and bubbling up at the surface in a surprising and frightful manner.

The larger pieces of cast iron thus formed they call sows, and the smaller pigs. They also make moulds for a great variety of things. These come very cheap, because there has been no second work about them; but when broke they are of little value when at a distance from the works; and the brittleness of cast iron is such, that whatever is made of it, is liable to that accident, and often from the effect of air-holes will burst even at the fire.

This difference of cast iron and hammered, or as it is commonly called wrought iron, is very great in quality, and is not less in price: and in this last article the difference though great is very reasonable; the price of the cast iron being founded on nothing but that of ore and fuel, whereas the other depends upon a vast deal of labour; and it is made amends for by the intrinsic value; wrought iron, which comes so much dearer, being always worth a certain price in any condition; whereas the merit of the other is principally in its form, its worth being when broke little or nothing.

Cast iron is however a very serviceable article to the builder, and a vast expence is saved in many cases by using it; in rails and balusters it makes a rich and massy appearance, when it has cost very little, and when wrought iron much less substantial would come to a vast sum. But on the other hand, there is a neatness and finished look in wrought iron that will never be seen in the cast; and it bears accidents vastly better.

A COMPLETE BODY

90

Part I.

The uses the architect has for iron are not less numerous than they are important; railing has been named already, and is of many of kinds, plain, or with pilasters, or a variety of ornaments. Window bars, chimney bars, and that vast variety of hooks, nails, and fastenings, swell the account greatly: we are also to count among the lesser articles, hinges, staples, latches, bolts, and locks, and a multitude of others; and among the larger those cramps and chain-bars that are sometimes necessary to hold the parts of a building together, and those that sometimes supply the place of stone-work; in all these he is to consider the necessary quality and substance; not trusting to the smith, whose ignorance may often make him suppose more quantity is necessary in iron-work than is; and whose interest may sometimes make him crowd in a great deal whether it be needful or not.

He should also be careful to look into every piece of large iron-work himself, to see in what manner it is finished, for in these instances there is always a great stress laid upon iron, and it will be very ill able to support it if it be carelessly wrought. Nothing is so common as to see iron-work full of flaws, and nothing is so hurtful, or so needful. There requires nothing more to give it an equal body and strength throughout, than good hammering; but this the servants are very apt to omit, and the master is too ready to look it lightly over.

Chain bars are frequently necessary in groined arches of brick or stone; they are used in arcades to tie the front piers, and to hold them to the main building: they are also used occasionally in other parts of buildings where great stress is laid.

Sometimes they are so disposed that they may be taken away when the several parts of the building have settled, and all is safe; but they frequently are left in their places.

Cramps are of great service in holding stones together, where it is required they should firmly keep their places. We have given figures for the explanation and illustration of these two great uses of iron in our eighth plate; and in our ninth and tenth shall give various kinds of railing.

Having thus finished what appears needful to be said concerning the materials used in building, we shall close the account with a few words on the necessity of the architect's understanding and overlooking their use. It is he whose credit is at stake, and it is he therefore who ought to have an eye to every part of the work. The several other persons who are employed according to their trades and professions, work under him, and are accountable to him, as he to the person at whose expence the building is carried on; it is therefore he on whom the dependance is placed: and he is to answer for the miscarriages of the others, because it is under his direction they are employed.

We are sensible that among the persons of distinction, who amuse themselves with the study of architecture, some of whom have done a great deal of honour both to themselves and the science by their progress in it, a consideration of these things which are only subservient to the great objects of their designs, will be looked upon as

too mean and trivial; but those designs can never be fulfilled, nor those great objects raised to their perfection, without some person who has skill and integrity be deputed to look after them. As to the professed architect, though the science be a very noble and exalted one, he must not be above stooping to these which are its most minute considerations. We admit that there is as much room for genius in architecture as in writing, and that it may be as much displayed in a great building as an heroic poem; but in order to this, the attention we have advised to little things is a necessary previous step, without which the others cannot be taken. It is the foundation, an error in which undermines the whole superstructure.

FIGURE

Book I. **FIGURE 1,** *in Plate VIII, shews the plan and elevation of an arcade, part of a building in which the chain bars are seen in their places, with their manner of fastening.*

- A. The chain bar.
- B. The collar into which it is received.

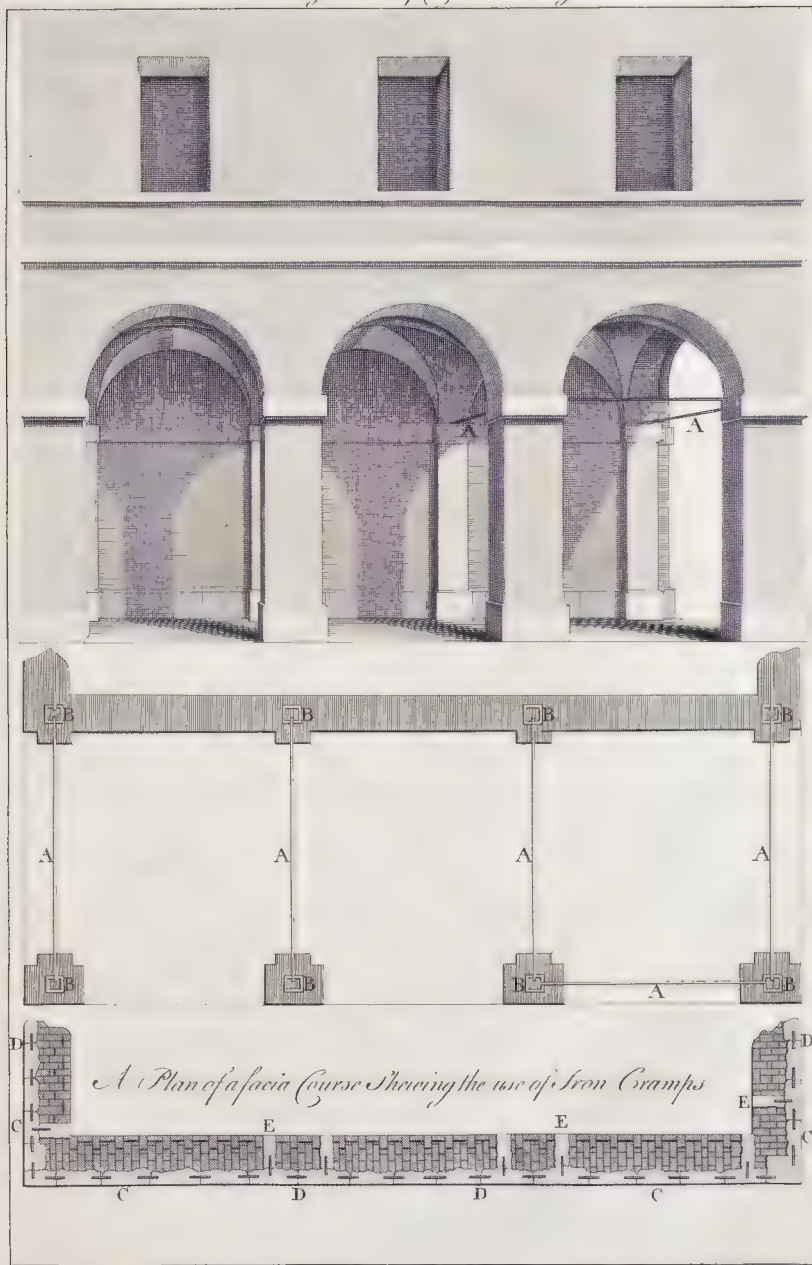
FIGURE 2. *A plan of a plinth, or what is commonly called a fascia course, shewing how the stone ashlers is cramped together.*

- C. The ashlers. These are stones let nine inches into the wall.
- D. The cramps of iron holding them together.
- E. The bond stones carried through the brick wall.

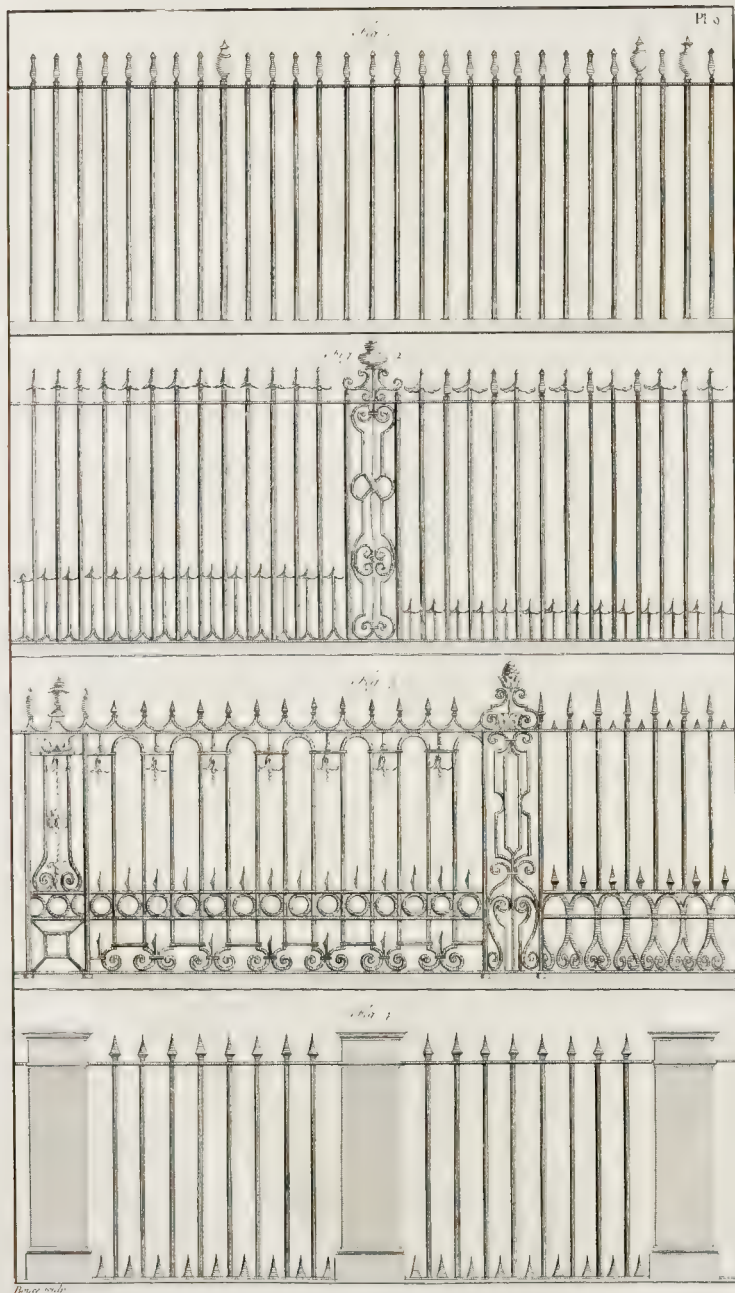
THE END OF THE FIRST BOOK;

BOOK

A Plan and Elevation Showing the use of Chainbars in Groined Arches. Pl. 5.







E X P L A N A T I O N

O F

P L A T E IX.

F I G U R E I.

A Piece of plain IRON-RAILING.

In this the rails are let into a stone curb, and fastened with leas.

F I G U R E II.

RAILING of a somewhat richer kind.

In this the rails are framed into a flat bar at the bottom, which is let into a groove in the stone-work.

F I G U R E III.

RAILING of a more ornamental kind.

In this the bar into which the rails are framed is supported by balls; and thus the frame is kept out of the wet, and is safer from rusting and rotting.

F I G U R E IV.

RAILING of a slight kind, with pilasters.

In this the bar is to be let into a shallow groove.

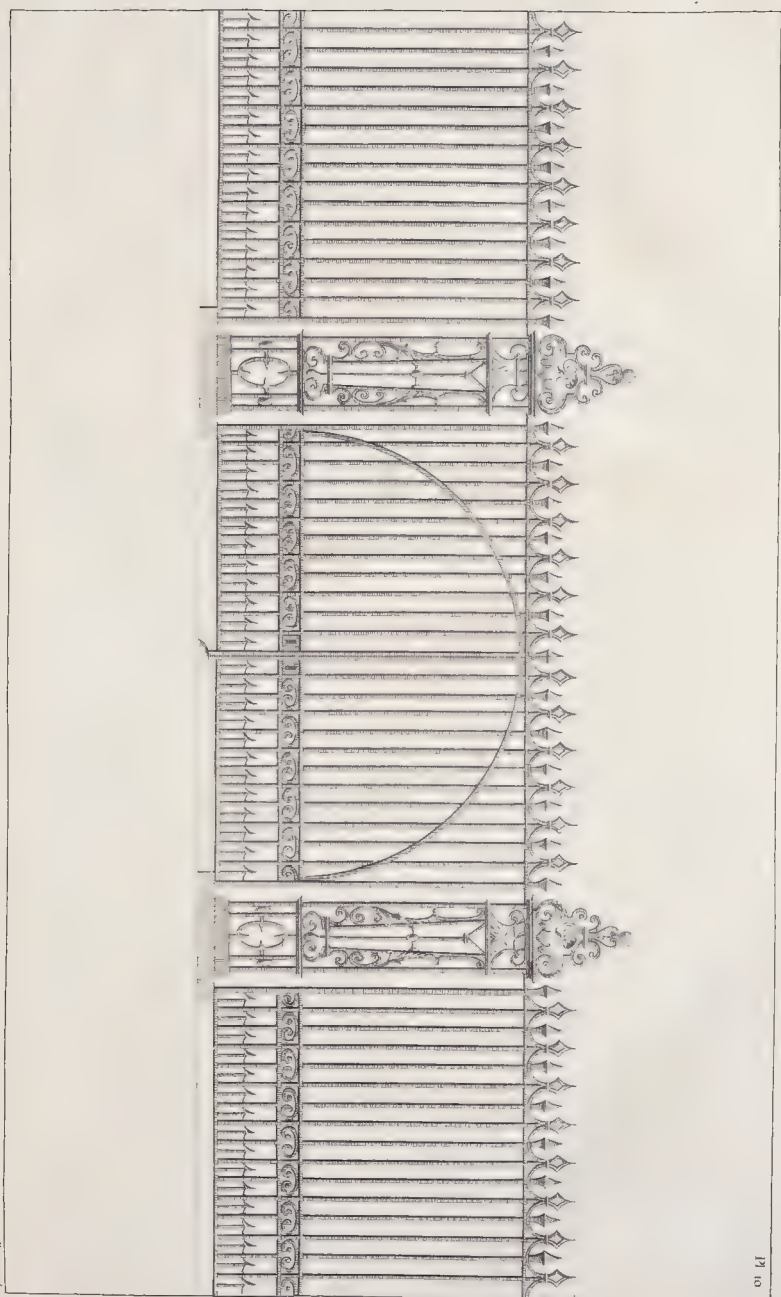
E X P L A N A T I O N

O F

P L A T E X.

This figure represents,

A piece of RAILING with an iron gate in the centre, the ornamental part on each side of the gate serving by way of piers.





B O O K II.

O F

S I T U A T I O N S :

A N D O F T H E

Essential and Ornamental PARTS of BUILDINGS.

The I N T R O D U C T I O N.

THE student has been, in the preceding book, made acquainted with the materials which are to be used in erecting an edifice; and he will naturally begin to think of putting them together. It is necessary we stop him for one important consideration, that is, the choice of a place for the building. This is essential in the highest degree; for the most elegant structure may lose a great part of its value from an unconsidered situation.

There go many articles to this entire consideration, some of greater, and others of less consequence; but we shall wish him to give a due attention to them all. We shall therefore lay them before him as they rise in the examination of the subject, and point out how far each is to be regarded.

When we have thus discharged the article of situation, we shall lead him toward the great end of his studies, the designing, executing, and finishing an edifice, smaller or greater; by an account of the essential and the ornamental parts of buildings, as preparatory to the general design. After this, having a thorough knowledge of the materials, a true judgment of a situation, and an idea of the necessary and the ornamental parts, we shall be able to lead him, without confusion, to the designing and arranging the first, and to the selecting, constructing, and disposing of the others.

As we have prepared him to read, speak, or hear, concerning architecture, without difficulty or confusion, by an explanation of the terms, we shall prepare him in this part for the consideration of an edifice by an early acquaintance with its several parts; after which we shall be understood in treating of the whole without repetitions or explanations of every head.

Whatever be the building he proposes to erect, it must have a foundation: we shall therefore, in this place, acquaint him with the nature of foundations in general; that we may hereafter speak of them without leading him beyond what he has considered. In the same manner, a floor, a chimney, and roof, are articles that must occur, in whatever building, for the uses of life, and shall be the subject of the farther enquiries; and these will be here treated of in the same manner as the article of foundations. These are what we understand by the essential parts of buildings; and to them we shall add the like accounts of such others as come under the same denomination.

Among the ornamental will fall the orders of architecture, which give the greatest beauty that can be communicated to a building; but they are not essential parts, because very good, nay very elegant, edifices and houses may be erected wholly without them.

From this view of the plan and nature of the present part of our undertaking, the reader will see not only what we comprehend under the distinctions we have established in the several portions of buildings, but why we have proposed to treat of them in this part of our work, and in this manner. We propose leading the student from the principles to the practice of the science, and from its smallest objects to its greatest undertakings. That we may be understood, we clear every part as we go, and endeavour to explain first those things to which we afterwards refer.

PART I.

OF

SITUATIONS.

CHAP. I.

Of SITUATIONS in general.

WHEN we speak of a situation we naturally mean that of a house in the country. In cities and great towns business is more regarded than pleasure, and men are confined to do not what they chuse, but what they can. They are cramped for room, and must conform to the method of other buildings: what regards a situation therefore in this respect, concerns rather the placing of streets and squares than of private houses; and this is a consideration upon which we shall enter in a succeeding part of our work. We shall here speak of situations for private houses in the country, where a place may be chosen according to the inclination of the builder or the owner, where he may have room to spread his edifice over what extent of ground he pleases, and no check upon his fancy as to the disposition of its parts.

In all buildings we seek convenience and pleasure, and neither the one nor the other can be obtained unless we properly consider the place and situation of the structure: the conveniences of life cannot be had unless they are either produced near the spot, or there be common ways of conveyance for them: therefore the country house should stand either in the neighbourhood of a town, or have water-carriage or common land-conveniences.

Pleasure can never be where there is not health; therefore such a situation is to be chosen as is not infected with damp or other unwholesome vapours; and after this the beauty of prospect, and advantages of diversions, are to be regarded.

These are the first and great considerations, but the lesser are not to be neglected: though it be convenient to be near a town, or in the way of cheap and easy carriage of needful matters from one, yet it is a great advantage to have as many of those things produced about the house as possible. Thus there should be trees in sufficient quantity for the sake of defence, shelter, and the common uses in country implements, and for fuel; and other such common articles of nature, and the means of raising such others as are to be the produce of our industry.

The place of the house should be such that the access to it be easy and convenient.

1. 1. 1. II.

The country about it, even to a great distance, may be understood in some sense as the property of the eye, and its situation and disposition are therefore to be regarded with respect of prospects; the more cultivated it be, always the more cheerful and beautiful; for there is a melancholy look in desert places. Where it rises in an agreeable manner so that two or three views are seen at once, the object is the more pleasing; and a road at a proper distance, or a navigable river, affords a continual moving picture.

The great articles in prospects are variety and extent; either without the other tires. There is something composed and cheerful at the same time in a home view, or limited prospect; but we grow weary of it if in some other part there be not a larger field: and where the extent is in a manner unbounded any way, after a while we see only the clouds and the horizon.

The prospect which is altogether too extensive is better to be born with than that every way too limited, because it may be in some degree remedied, but the other cannot: we can obstruct the sight when we cannot enlarge its scope; and it is easy to block up a view with trees, when it is impossible to open a vista through mountains.

It is the misfortune of our senses that we cannot see distinctly at great distances, and from hence arises that defect in our minds, that vast views swallow up and drown the apprehension, so that in seeing too much we regard nothing: but this we can palliate; the other is without the least glimpse of remedy.

The neighbourhood is another consideration not foreign to our present subject, for it is determined by the place.

Retirement is what we seek in the country, but it must not be too absolute. We all fancy we shall be pleased with it, but few of us can well bear it in the extreme. When we first think of leaving a populous city, the charms of a retreat appear double, because of the opposition to that noise and hurry; but when the comparison is forgot we grow weary of the sameness of the scene.

Retirement is apt to be melancholy; we should therefore seek the means of remedying its fatigue, for it is greater than that of business: let us have them in our power, and we shall perhaps be the less inclined to fly to them. There is this perverseness in human nature that we want ten times over what we cannot have, and that often for no other reason but because we cannot have it.

The remedies for the melancholy of retirement are company and conversation; let us therefore provide for them, but without forcing them upon us when we are not disposed for them. Company in the country is as a medicine, it nauseates when we do not want it.

I would not have a man lose the idea of retirement for fear of being melancholy; let him therefore not fix his house in the midst of others, for that were like remaining in a town: nor let him bury himself in a desert, out of the reach of every body, for there he will be forlorn. Let him chuse the place for his house where there is retirement, but let it be within reach of company.

The meaner sort of country people are not to be considered in this light of a neighbourhood; nor indeed for a man of middling fortune are the greatest: these two ranks are severally company only for those of their own degree. Let the neighbourhood contain some number of families whom he can visit upon equal terms; whom he can receive as they receive him, and visit without pride or shame.

The neighbourhood of very mean persons is disagreeable, because they will be too much among the inferior part of the family; and that of the very great is sometimes troublesome. I have seen an advertisement in which, among other recommendations of a country house, there was inserted that it was not in the neighbourhood of a lord; this was an indecent reflection; but as the temper and character of the next successor is never to be known, it is not agreeable to be near too much power. Such a situation is compared by an elegant writer to that of *Mercury* in the heavens, ever in combustion or obscurity from brighter beams than his own.

These are the general articles which regard situations, but there fall under the consideration also a great many which are particular, which together constitute the agreeable and the healthy. These chiefly regard the air, the water, the soil, the elevation, and the aspect: we shall treat of them separately under the division of the succeeding chapters.

C H A P. II.

Of the Air.

WE have reason to reckon the air among the first and most immediate advantages of situations, for it is in search of that we often principally, and sometimes only, fly into the country. We live so immediately by it that the manner of our living will be determined vastly by its qualities: our health will of necessity depend greatly upon them, and upon that depends the enjoyment of every other satisfaction.

We are not here considering the sick, for according to the different nature of their disorders different temperatures of the air are required; sharpness being the principal recommendation to some, and softness to others. These are considerations that regard the choice of an occasional spot for the recovery of health; but we are here enquiring into such an air as may generally preserve it, and are to seek for such as will be most universally agreeable.

The choice of good air is the more essential because it is one of these things the faults of which we cannot always mend. If the place be choaked up with trees, and surrounded with quagmires, these will render the air unwholesome, and as they are the cause it may be amended by cutting down the one, and filling up the other: but this which is the least occasion of its badness can be obviated only in a certain degree; and that at a great expence; where the defect arises from these causes, and they are in any great degree, no price will purchase the perfect cure: and in many other instances the air is altogether out of the power of human art to mend at all.

Book II.

We are always to live surrounded with air, and we see by frequent experience that it can and does often enter with all its qualities, and, when they are bad, vitiates the whole texture of the blood. In the most considerable instances of the air being rendered bad by accidents of nature, we see that it occasions very terrible and desperate diseases. Where the air is always moist and damp, agues, coughs, fluxes, cholicks, and consumptions, are always frequent; and when it is impregnated by the steams of mineral matter, palsies and other of the greater or lesser nervous disorders are certain to be the consequence. It is in the same manner that air, in whatever way it is faulty, according to the nature of that taint, affects the constitution. When we have once set down in it we cannot remove without giving up all that we have been doing in building; and great instances might be produced to shew how absolute is the folly of imagining art and contrivance can always mend its faults.

As many disorders are the constant and certain effect of a bad air, health, ease, and cheerfulness, follow naturally from breathing a fine and pure one. To be good in general, it must be neither too sharp, nor too thick: it must be pure in itself, and it must be within the reach of natural amendment, for that is of vast effect, and absolute necessity; though the artificial amendment be in most attempts imaginary and idle.

We have instanced the principal things that make air bad in itself; but when there are neither of these, neither mineral steams, nor marshy exhalations, still, tho' good in itself, it requires certain accidents to keep it in that condition. We are told that if the vast body of water in the ocean stood still, it would corrupt; it is the same with respect of air: the wind is necessary to keep the one sweet, and motion is as needful to keep the other in order. Air that we have once breathed is no more fit for that service; we can spoil a large quantity of it that is confined in a little time in the same manner, and the effluvia of our own bodies assist in it; therefore there must be a current or change of it, or at least its parts must be put in motion.

Air requires the effect of the sun to purify it, and the force of winds to exercise it: if we place our house where these cannot have access, we shall condemn ourselves to breathe a foul and unwholesome kind; though there be no apparent cause that makes it so. Nothing is well that is not in the course of nature; the sun and winds were meant to purge the air, and where they cannot come, it will not have the advantages universally intended and universally needful.

We see then the great faults of the air, and to what they are owing; it is in our power to avoid them all by the proper choice: but if we have not this caution before us we may be led by some trifling consideration to give up the most essential benefits of nature.

The summer is the season in which we most constantly remain in the country, and it is the least healthful part of the year, we ought therefore to be the more cautious not to add to natural imperfections the disadvantage of an unwholesome air.

Upon the principles already laid down the practice follows easily. As we see what are the occasions of the faults of air, let us avoid them in our situation; let us fix it

in an open and elevated place, where the air being in itself pure, will be free and in continual motion. The advantage of a prospect brings this with it: when we see a vast extent of country we breathe an air that spreads itself at large in all that space. The elevation of the ground giving a descent for the running off of moisture, none will stagnate about the house; and the air being pure will continue so, because it will not be loaded by vapours from below, and it will be open to the effects of the sun and winds.

It was the custom of our forefathers to build in bottoms, and hide their houses among woods and between hills; but this is the most unhealthful as well as unpleasant situation. An elevation shews the house, and every one who builds with taste desires it should be seen: the inside he contrives for use and his own convenience, but the outside is decorated for shew, and to please the eyes of others. A house situated on the side of a hill is disposed in the manner of a picture, every part of it is seen, and it is seen at a distance; in a bottom it is ill disposed for view, and it is buried: this is an accidental consideration in this place, where we are considering the effects of a situation with respect to air, but it is worthy to be mentioned. There is sure to be too much moisture in these places because the rains settle on them, and are detained there; and the sun has not sufficient force to exhale them: they are sheltered from the wind, which was the great reason of their being at one time chosen, but they are under the disadvantage of the air stagnating, for want of the natural and necessary exercise. We see therefore that it must be unwholesome in these places, because it is filled with vapours, and it stagnates; the two greatest occasions of the air's bad qualities. In these places, while others are deprived of the pleasure of seeing a good house, the owner shuts himself out from all prospect: and we have observed already that a good prospect and a healthful air are things very naturally connected.

These bottoms are always colder or hotter than other places, and always disagreeably so; where the sun cannot well get at them, the air is continually raw, and where it has free access it scorches. The winds descending from the tops of the hills that surround such a bottom, or getting in at some opening between them are violent and unnatural; and in those closer places where they have not access at all, the air being damp and stagnating, cannot possibly be otherwise than unwholesome.

We see how essential the qualities of the air are, and how much they depend upon, or are influenced by, the situation of the spot; a free and open air is of absolute necessity to its being good, and for the rest we are to avoid the extremes of too moist, and too sharp: the first defect is natural to places that lie too low, the other to such as are too high. Upon too elevated a spot we stand often too much exposed; we are open but we are bleak; the air is too thin and acute, and we are too much exposed to the winds: when we fix upon a situation that is too low we have fogs all winter, and ill smells in summer; the air therefore is in neither case pure or wholesome. Upon the whole we see that on all considerations that air which is the most open and free to sun and winds, and is moderate in the degree of dryness and moisture, is to be chosen; and that such is the air we are most likely to find on some gently rising ground, where there is an open country before, and on every side an agreeable prospect.

C H A P. III.

Of WATER.

WE have been the longer upon the article of air in a situation, that we may be shorter on the others, for their advantages are in a great measure determined by the effect they have upon that element, which is the most essential of all others to life and health. Water comes the next under consideration, for as the former is requisite for every thing breathing, this is of absolute necessity for the common uses of life.

When the architect has fixed upon a spot that is in an agreeable neighbourhood, has a healthful air, and a good prospect, let him next examine in what condition it stands with respect to water. Where that is wanting no advantages can compensate: but we are not only to consider the quantity but the kind and qualities. Water may be too abundant as well as too scanty, and it may be a plague as well as a benefit to the dwelling.

The architect is in these cases to have two things in his view to provide conveniences, and to obviate accidents; and without a proper regard to both he may run into the way of one in procuring the other.

We have advised that the situation, if that can be done, be fixed in the neighbourhood of a navigable river; but let him see that it be out of the reach of its inundations. He is not only to fix his house so that the lowest parts of it be above the level of the water in the greatest floods, but even the garden and every part that belongs to it should be out of the reach of possible overflowing.

As the point is to find a healthy and convenient spot, we have advised an elevated situation near a navigable river, which in two articles provides almost for the whole; but as these things are not always within reach we must shew how to atone for the deficiency.

If there cannot be had the advantage of a navigable river, let there be at least if possible a running water near. This has more advantages than can be imagined by those who have not searched deeply into these things: every one chuses it for pleasure, but it greatly conduces to health. It refreshes the air in summer, and at all times serves as a gentle wind, putting it in some degree in motion; the current of water moves the air that rests upon it, and this element is so thoroughly moveable that when it is stirred in any part the effect spreads very far.

The convenience of plenty of water about a house is very great; a defect in this respect has more disadvantages than almost in any other: and the danger of having any bad effect from a great quantity of it is prevented by its being a running water. The garden may from this be well watered, the house in every respect supplied for the necessary uses, cattle have plenty of drink, and it is wholesome for them in its kind, and it is of all others the greatest ornament.

These are the advantages of a running water, and for these it is to be extremely valued; but as much as we would for this reason seek to be near running water, we must avoid a great quantity of such as stagnates. The effect of these waters is exactly the contrary of that of the others in every respect. As nothing affords so pleasant a prospect as a running water, nothing gives so bad a one as a standing lake. In the running water the surface is clear and bright, in the standing it is covered with filth and ill-looking weeds. The running water purifies the air, the standing fills it with offensive vapours. Nothing contributes so much to load the air with disagreeable and unwholesome matter as stagnating water.

Nor is the inconvenience confined to this article of health; for we are troubled with insects and vermin in places where there are large standing waters, which are either never seen at all, or are not plentiful any where else. Gnats, and a multitude of other troublesome little flies, are always about standing waters; for they breed there, and they are very troublesome: the gnat in particular cannot be in any abundance any where but where there is stagnating water. That fly lays its eggs upon the surface of a pond, and never any where else; and from these is hatched a little worm, which lives and feeds in the water for some time, till at length it undergoes a change like that of the caterpillar; and the fly, like the butterfly, is produced out of its body. The gnats do not lay their eggs upon running waters, because the current would carry them away; neither does the worm that is produced from them thrive except in such as is thick and foul: about these places therefore there will be always a vast quantity of those and the like insects, from which running waters are free.

What we have said of the air is equally true of the water: as its faults and imperfections breed particular disorders in those who breathe it, so do those of waters in such as drink them, whether in their crude state or however altered.

The differences of water are greater than can be imagined; rain water differs from that of springs, spring from river waters, and this from the water of ponds. We have the authority of a very accurate experimenter to vouch that there is water in *Africa* lighter by four ounces in the pint than the common water of *England*. We have not sufficiently examined the differences of our own in its several kinds and forms; but health and convenience are both so much concerned in this enquiry, that none is more worth the making.

When the architect has fixed therefore upon a situation which is right, in respect of the water in its neighbourhood, there being plenty of such as runs, and not too much of the standing kind, let him next examine that which is immediately upon the spot, or that of the river, if very near, in a proper and accurate manner, to see how it is suited to answer the purposes of life and health.

Hippocrates commends the lightest water, as most wholesome; and it is a very considerable article. We read in Herodotus of a very healthy, and long-lived, people, who drank a water so light that most kinds of wood sunk in it. This is very well countenanced by the experiments made upon the water brought from *Africa*; and there is great reason for concluding that the *Greek* was right who mentioned this quality in the water as very conducive to the health and long life of the inhabitants.

Book II. After the lightness, let the water be examined by the eye, and by the taste: that which is most transparent is best, and it should never have the least ill taste or smell: farther it is a mark of good water to warm quickly and cool quickly.

The water should be tried farther by examining how it lathers with soap, and whether it boils garden-stuff well. River water is commonly found to do these things well, and pump water too often but ill: however, if the fault be not great in this respect, it may be born with, for it will be remedied by letting the water stand some time open to the air after it has been pumped up.

The purest waters of rivers are those which have the swiftest current with a clear transparency, that run over a clean gravel, and are not encumbered with weeds at the bottom, or beds of flags and rushes at the sides.

It is always convenient to have spring water about a house, be the river water ever so pure: for this reason wells are to be dug; and it is convenient to do this one of the first things, because nothing so perfectly shews the nature of the ground, according to which the architect is to conduct himself with respect to the foundation. In fine, that house is best situated in respect of water which has good springs for its wells, an agreeable body of running water within due distance for beauty and convenience, and has least stagnating or standing water that may be in its neighbourhood.

C H A P. IV.

Of the SOIL.

THE soil, though it has been less accurately considered in respect of situations than the air or water, is far from being a trivial article on this head: the air and the water, which are allowed to be so important concerns, always may be, and frequently are, affected by it. We are therefore to consider it first in this light, and afterwards in regard to that more immediate concern, its fertility.

We have seen that the air may be influenced by unwholesome vapours arising from the earth; but these, in general, where they are frequent, come from a greater depth than what is commonly understood by the soil: happily for us this country is not much subject to them: but there is a consideration of that nature in which the soil is greatly and immediately concerned; this is the loading the air with moisture from detained waters.

How long, and in what degree, the rains shall be detained within the reach of the surface, is altogether determined by the ground, and comes immediately under the architect's consideration. The soils in *England* may be divided into three general kinds, sandy, loamy, and clayey; we may add chalky to these, but they are not very eligible to build upon. The sandy is the lightest and loosest, and in this may be included the

the gravelly kind: the clayey is the toughest and heaviest. These are the two extremes. The loamy consists of sand and clay with other mixtures, and is of a middle nature between them; it is therefore, as middle things in general, the most eligible.

In absolute sands, or gravels, there is always a healthy dryness in the air, but they let the rains soak through them too quickly, so that enough of the wet is not detained for the common purposes of the growth of plants; and the dryness and sharpness of the air in high situations, with these soils, is too much for many constitutions. On the other hand, where the soil is clayey, if it be in the extreme, the water that falls in rains is not able to penetrate it: it is detained too long, and here all is in the other extreme. If the clay lie upon the surface it is damp and dirty in wet weather, and it cracks and chops in dry, both which are very disagreeable; and if it lie at some small depth under the surface, the rains penetrate easily to it, but are detained upon it, chilling the roots of plants, and by that stopping their growth, making the place damp and moist.

The loam, which is of a middle kind between these, is subject to neither of their defects; it receives rains freely, and detains them sufficiently, but not hurtfully: there is enough moisture in the earth to soften by its vapours the great sharpness of the air, but there is not so much as to chill the roots of plants, or occasion a dampness at the bottom. We have said that the builder is not, like the physician, to pick out an air that will be fit for some particular disorder, but such as, being pure and moderate, will preserve health. This air, so far as a soil is concerned, which is not in a trivial manner, will most naturally be found where that is loamy. The very best soil on which a house can be built is a gravelly loam.

The soil demands great consideration on the other accounts of its richness and fertility: these are of the most immediate concern for convenience and for beauty. A garden is a very essential article in a country habitation; and, both for use and pleasure, it should be on such a soil as will cause things planted in it to grow well. There is no soil so universally fertile as the loamy: it suffers the rains and dews to penetrate freely to the roots of plants, and it detains them, as we have shewn, sufficiently.

We see in wild nature a great instance of the general excellence of this kind of soil. There are plants that love clay, and these will not grow on sand; there are others which delight in sand, and these will not live in clay; but both kinds will grow in a loamy earth: indeed there is no kind that will not. This fertility in a soil extends itself not only to the ground belonging to the house, but to all that about it, and which furnishes the prospect. There is a cheerfulness in a rich country which is not in the poor and barren; and in proportion to the goodness of the soil is the beauty of the general face of nature.

This so certainly and perfectly accompanies the excellence of a soil, that before the ground is opened for examination, it may be known by the aspect of the growth and herbage. Where the corn prospers well, and the trees grow straight and beautiful, the soil is always good; for when it is faulty in one respect or the other it is equally seen; the herbage is poor in spite of all the labour and expence of the farmer, and the trees grow irregular and stubbed, or have an aspect of decay.

We

Book II. We would have the architect take into his consideration all the advantages of nature in their fullest extent, when he is about to fix upon the situation of a house. He must not expect that in any place he will find them all in their most full perfection; but knowing what that perfection is, he will be the better able to judge how far an excellence in one kind will make amends for a deficiency or imperfection in another.

C H A P. V.

Of the elevation of ground for a situation.

WE have occasionally given many reasons why a country house should stand upon an eminence, but we come now to examine that point separately, and to consider what the elevation should be, according to the general nature and circumstance of the ground.

Every elevation of ground has the advantage of driness, and a more wholesome air than is on flats or in hollows; less moisture remains upon it, and the air has a more free current; but these advantages are found only in moderate elevations, for in extremes every thing is faulty. Because an elevation of ground is convenient, the builder must not fix his spot upon the top of a high hill; the air there is too sharp, the winds have too much power, and the place is bleak and commonly barren. All eminencies are agreeable, but moderate ones the most: they avoid the disadvantages and imperfections of the others.

The higher the elevation the more necessity there will be for shelter; and, in general, the less possible it will be to have it. All the means of shelter are confined to trees, and these will not grow on those bleak and mountainous heights, where if the architect should place his house they would be most wanted. The side of a hill for this reason is preferable to the top, and the ascent should be gentle, because otherwise the coming at the house is troublesome; and all the walks about it are tiresome.

Beside the exposure and bleakness of very high situations, water is commonly wanting; and where that is not in sufficient plenty, there will not be good verdure. The prospect from such a place is fine; but the contrast of what one sees, with what one has, is afflicting: when we view the fertility of the fields below, the barrenness of our situation is the more hateful.

The most agreeable eminence for a situation is that upon the slope of a moderate hill, where the ground rises gently up from the plain, and continues rising behind the house a little; where the height is sufficient to give us a command of the plain below, and where there are trees to shelter us from the more disagreeable and strong winds, but none to block up the prospect.

If the house be for a stranger, let there be as much ground taken in as will serve his convenience; but if for the owner of a large territory, let its place be as near as may be contrived to the centre of his possessions. There is a pleasure none but the

man of fortune knows, in commanding an extensive prospect every way from his house, and knowing that all he sees is his own. Chap. 6.

A situation which thus has a fine air, plenty of good water, and an extensive prospect, with a good soil, and the defence of trees, may be said to be perfect. He who can find such a one need scruple no expence in his edifice, for he will be sure never to be tired of it; and if accidents should influence him to leave it while he liked it, he would never fail of an opportunity of disposing of it to his advantage.

We have now examined the several particulars on which the convenience and healthfulness of a situation depends, and shall close our observations on this head with a chapter of general observations on the latter and most important article, which while they illustrate the truth of the preceding principles, will at the same time lead to a familiar, easy and certain manner of judging.

C H A P. VI.

Marks of a healthful SITUATION.

THE reader has seen on what considerations the healthfulness of a place depends. It will not be difficult for him to determine on a little examination in what degree any particular spot has that great advantage: but we shall here add certain common and familiar observations by which it will be known at sight. These will be sufficient to determine in a general way without such examination; and they will in a more particular and accurate enquiry always confirm it.

We have referred the architect for a general idea of the goodness of the soil to the growth of those trees and herbage that he sees upon it; and we shall in the same manner advise him to make his first conjecture, before his enquiries, by the general face of things, including the other buildings and their inhabitants; and to confirm the result of those enquiries by the same means afterwards.

With respect to buildings, if he perceive them clean and fresh on the surface, though so old that the materials begin to decay, it is a proof that the air is pure: on the other hand, if the walls be tinged with green and other colours, and moss and other herbs grow upon them in abundance, he may look upon it as a proof that the air is damp and bad. In general he will find the buildings that stand on elevated situations, good soils, and in a free air, of the former kind; and those which are situated in bottoms, on damp soils, and choaked up with wood, of the latter.

If the trees by their regular growth and thriving aspect declare the goodness of the ground, let him observe the cattle in the adjoining fields, to know what is the condition of the air and water. Provided the pasture be tolerable, these creatures cannot fail to thrive if they have the common advantages in those two respects; but where there is a fault in either or both of them, they will shew it in their aspect. If they be hearty, brisk, and strong, it shews that the air is good and the water pure: if they be

Book II. feeble, poor, and heavy, the fault is commonly in one of these two particulars, and most probably in the latter.

From the brute animals let him ascend to the inhabitants; for in their faces and conditions he will read the most certain account of the general healthiness or unhealthiness of the place. High spirits, strength to labour, a good body, and a fresh complexion, are marks of health that can neither be disputed nor mistaken: the lower people have all these, from their moderation of diet and exercise in working, in a degree superior to the dainty and the idle; but they have them not in all places alike. He who should have observed the inhabitants of the *Alps* universally with swelled throats, might naturally conclude that if he fixed among them he should have the same, before he came by a critical enquiry to search the cause of it in their water. This may serve as an instance of the general manner of judging of a situation, before we descend to particulars; and more or less it will be found true in all.

There is something in a good air that is as it were the object of taste; we perceive it as we take it in, and are scarce ever mistaken in judging of it that way: but it is only in elevated places that we have this mark of its purity. In the same manner that we perceive this the moment we breathe it, we are struck at sight by that appearance of robust health we see in the faces of the inhabitants on healthy spots; nor are we any more mistaken.

Our own species are the most tender of all the animal kind, and feel the bad effects of air sooner than any other. The cattle will sometimes shew natural defects in a bad place as has been observed, but their disorders are generally an indication of badness in the water: men shew the lesser defects of the place in their faces, and are affected by every fault that can attend it. We are subject to more disorders than other creatures, and they more easily fall upon us; it is a reason why we should be more upon our guard, to avoid the occasion of them: nature which has left us liable to them gave us our reason for that purpose. When we have our choice of a whole kingdom in which to fix our residence, it is an unpardonable error to place ourselves where any great convenience is deficient; but where the means of health are wanting it is greatest of all.

The general occasions of this we have delivered separately, as they regard the air, the water, and other accidents; and we here propose the plainest and most certain method of assuring ourselves whether we have judged rightly by those rules; for in places where others enjoy their health, he who comes to seat himself from elsewhere may, where they do not, probably neither will he. There is an advantage he may have over others by fixing upon a spot particularly healthy, whereas they are situated as chance disposes them; but it is best to have this advantage where all is good about him, for where the rest is bad it may not be sufficient to secure the benefit. The face of the inhabitants shews the general condition of the country as to health, and this may be obtained in a pick'd situation. He must be very weak, or very rash, who would fix himself where every man he met was shivering with an ague, as is the case in many marshy countries: on the contrary he may reasonably be tempted to the spot, who sees nothing but health in the countenance of the people, and reads of seventies and fourcores upon their tomb-stones.

P A R T II.

Of the Essential PARTS of BUILDINGS.

C H A P. I.

Of WELLS, SEWERS, and DRAINS.

THE architect has been led to the several considerations which are concerned in the choice of a place for his building, and he has been before acquainted with the nature of those materials with which it is to be raised : we are now to lead him to the employing those materials on that ground in the most secure and commodious manner ; and this by first giving him a general idea of the essential parts of a building, and then delivering rules for the raising from these and the ornamental, a regular and beautiful edifice.

The first of these essential parts is a foundation, the ground-work and basis of the whole ; a thing so important that the least error or fault in it affects the whole building, and is not to be rectified without great difficulty, expence, and inconvenience.

To avoid the danger of those faults or errors, we are in this chapter to give such cautions as are requisite, and prescribe such methods as will certainly inform the builder where will be his hazard. This chapter may be considered as preparatory to the succeeding : we have fixed upon the spot for the house, and we are about to lay its foundation ; we shall therefore here examine the ground on which it is to be raised : and while we prepare for the conveniencies of the building, assure ourselves of the condition of the earth that is to bear it. According to this the foundation is to be laid with greater or less expence, care, and trouble.

It is necessary that every house have conveniencies for discharging its refuse water, and other useles and offensive matters ; these are obtained by digging and laying sewers and drains at proper depths, and with the needful outlets ; it is convenient also that there be a well for a supply of spring water for certain uses ; for though this be inferior to the water of ponds or rivers for most occasions, there are some which it answers much better.

As these therefore are conveniencies and necessities that must be at some time prepared, we mention them first in order, and advise the builder to begin with them, because they will discover to him the nature of his ground, and consequently the method that is needful to be observed in his foundation. The opening for sewers and drains shews him the strata or beds of earthy matter to some depth ; and that of wells to a much greater. When these are finished therefore he is to begin laying his foundation ; and he is to prepare himself for the method of doing it by what he sees thrown

up

Book II. up in the digging : for he will know by that whether the soil be in itself strong enough to support a foundation, or whether he must have recourse to art ; and in what degree, or what manner.

As to sewers and drains the great care is that they be made large enough ; that they be placed deep enough, and have a proper descent ; that they be well arched over, and have so free a passage that there be no danger of their choaking up ; the cleaning them being a work of expence and trouble.

Wells are to be sunk in places where they will stand with most convenience, and at such a depth as to retain a sufficient quantity of water. They must be carried down below the level or surface of the water that is collected within the strata of the earth, otherwise they will not receive or hold it ; and they must be carried so far below that they may detain a proper quantity.

The collection of water between these strata lies so differently in various places, that the depth of wells is necessary to be five, six, or eight times as great in some spots as in others, not accounting the extremes of either : but sometimes a great deal of the expence of digging wells where the water lies thus deep is to be saved by boring. When the well is regularly dug to twenty or thirty foot deep, it is in many places a good method to have recourse to this expedient : a large augur is to be used, and the earth carefully taken out of it as it becomes needful. The water will often at length rise up through the hole with great impetuosity, and fill the well to a sufficient depth.

This method is practised in *Italy*, *France*, and *Germany*, with great success, and has been also very happily try'd in several parts of *England*, particularly in *Essex*. The expence of this is so vastly less than that of continuing to dig and make the well to the needful depth in the usual manner, that wherever the situation of the place renders it at all likely of success, and water is not found at a moderate depth, it should be try'd. It is most likely to succeed in places encompassed with distant hills, or where there may be conceived to be subterranean passages.

When a reasonable conjecture can be made at what measure the water will be found, the diameter of the well should be proportioned to its expected depth. This may often be known very exactly from the wells in the neighbouring places, and when finished with a lining of brick or stone-work, it will need no farther care for ages.

In the neighbourhood of the sea the necessary depth of wells may be easily known by observing the level of its water. In *Bermudas* they have wells in a manner close to the shore, which rise and fall with the tides, and yet the water is perfectly fresh. In all parts of that island they find water when they have dug nearly to the level of the sea, and it is commonly fresh though not always. At any time if they dig a few feet deeper they come at salt water. These are facts very exactly laid down by Mr. *Norwood*, who has been upon the spot, and may be of use to the architect who is about to build under the like circumstances.

C H A P. II.

Of the qualities of the GROUND.

THE foundation of a building is that part which is laid under the surface of the ground in an opening made for that purpose; and serves as a basis or support for all that is raised above.

It is the first thing to be regarded in the erecting of a house, and so much depends upon it that it can never be considered too thoroughly. In some places the ground is naturally firm enough for supporting the building; and in these the foundation is to be laid with ease and little expence: in others the ground wants this natural firmness, and must be assisted by art. The first business of the architect is to determine whether the earth will do of itself, or whether it wants assistance; and if it be of the latter kind, his next enquiry is what kind of help it requires, and in what degree.

The best ground for a foundation is that which consists of gravel or stone: but the architect who intends a great or a heavy fabrick is not to content himself with what he sees on the surface, or near it. We have advised the digging for wells and sewers first, and have cautioned him to observe exactly what is thrown up; he will thus know what is beneath that uppermost bed, which promises in itself so much strength and solidity. There is often an unfound matter underneath, and in that case the strength and firmness of the superficial strata is but a decoy; and a dependance upon them will undermine the building.

Beside an unfound matter beneath, there may, in stony places, be an absolute vacuity; and this is a much more unhappy circumstance: there are many hollows in the earth, and no where so many as in rocky places. Such ground, since it often will deceive, should be always suspected. In this case the bed of rock which seems so firm and found a foundation, is no more than the covering of a vault or cavern, and may break in when loaded with a weighty building. This is the most terrible of all accidents that can attend an error in foundations. *Palladio* advises the throwing down great weights forcibly upon the ground in these places, and observing whether it sounds hollow or shakes; and the beating upon a drum set upon it, by the sound of which an accustomed ear will easily determine whether the earth be firm or hollow.

Though a foundation upon a rock be strong to a proverb, we are to examine in this careful manner whether the rock that presents itself be solid or hollow, before we can assure ourselves of its great advantages. If there be cavities we must examine in what degree, and whether they are likely to render the rock too weak for the superstructure, or whether its thickness over them be sufficient for their security.

Though rock be the best foundation, it is in many parts of this kingdom the least common. Gravel we have observed is the next; and in order to judge of its degree of excellence, we must observe the thickness of the bed, and the strata that lie under it, as they have appeared in the digging. If the gravel be a thick bed, and the under strata

Book II. of a sound and firm kind, and well disposed, there needs no assistance, for it will bear any thing: if otherwise, we are to have recourse to art, in various ways to be named hereafter, according to the nature and degree of the defect.

The other matters which may occur for a foundation, are clay, sand, common earth, or rotten boggy ground. Clay will often both raise and sink a building, yet it has a solidity which, with proper management, is very useful; the marshy, rotten, or boggy ground, is that which of all others nature has least prepared for a foundation; but even on this very great edifices may be raised with perfect safety, the proper methods being employed to secure them.

Piling is the method in case of these boggy earths, and where there is an unfirm sand, and this is one of the securest foundations when properly executed, notwithstanding the great natural disadvantage of the ground. What we have said of gravel may in a great measure be applied also to sand, which when it is dry, in a good body, and well supported by strong and sound under strata, is a very good soil for foundations; but what is said in the commendation of these two kinds, is to be confined to foundations for buildings on dry land; for in rivers neither sand nor gravel can afford any dependance at all, because the motion of the water is continually removing and disturbing them: in this case therefore they are not to be regarded, but the right practice is to dig down through them to the first solid bed; and if that lies at too great a depth, then let an opening be made in the loose matter, and the work trusted to piles driven down to the solid: upon piles so driven and covered with planks, any superstructure may be raised.

When the ground on which a building is to be raised has been dug or wrought before, we should never trust to its condition as so left, but dig through it to the solid and unmoved ground, and to some depth into that, according to the weight and bigness of the intended edifice.

This is a rule given by *Palladio*, and we see instances enough in modern buildings to shew the necessity of punctually observing it. One there is in *Rome* so great and so striking, that it will leave no occasion for mentioning any other; even *St. Peter's* is in danger from a neglect of observing this reasonable and important caution. That church is in great part built upon the old circus of *Nero*, and they have neglected to dig through to the solid and untouched ground to secure a foundation; the consequence of which is that the whole building is much the weaker. The walls were judg'd of strength enough to bear the superstructure of two steeples, upon the corners of the frontispiece; *Bernini* made the attempt, but if the walls were strong enough the foundation was not sufficiently firm. They found on this occasion an error that should have been obviated early, and they have but imperfectly amended it. The settlement this additional weight occasioned sent them to the foundation, where they found the defect: they stop'd the progress of the mischief, but the fault is beyond remedy.

An accident like this may be a warning for ages: we have told the architect he cannot be too nice in the choice of a spot for his building, he will see by this he cannot easily be careful enough in preparing for a foundation.

Foundations laid in the solid earth are always the most secure where that is hardest; and it is a very good sign when every shower of rain does not melt it into dirt. We have earths so hard that the tools will scarce penetrate them; these, when they have a sufficient support below, are the best of all.

C H A P.

C H A P. III.

Of preparing the ground for FOUNDATIONS.

THE form and nature of a foundation differs according to the intended structure of the edifice. If there are to be cellars and vaults underneath, the foundation is to be dug to the whole extent of the building; if not, it is to be cut in a kind of trenches where the walls are to be raised.

We call by the name of foundation so much of the walls as reaches from the bottom of the digging to the surface of the ground, for the word is equally used for these walls, and for the ground on which they stand. On the proper condition of these walls depends in a great manner the security of the whole edifice; they are therefore to be carefully proportioned in strength to the weight of the intended superstructure. In the same manner the depth of digging for the foundation, or the height of these walls is to be proportioned to that of the superstructure; in general for these two articles the depth should be about a sixth part of the height of the building, and the thickness of these walls twice that of those which are raised upon them. This is speaking generally; we shall in a succeeding chapter enter upon these particulars more largely.

Sound wood is a common underwork for a foundation on land; and wooll packs have been used very successfully under water.

In foundations near the edge of waters we should always be careful in founding to the very bottom. More errors have been seen in this article, and more accidents happened from them, than almost in any other.

The antients were very seldom guilty of over-sights, or neglect, in this matter: we have in many instances of the remains of their works, reason to be astonished at the strength they gave to their foundations. They sometimes made them massy and solid, and continued under the whole building; as in their arches, aqueducts, and some of the amphitheatres: in other of their structures they worked in the foundation with arches and pillars of such a strength as was fit to support edifices erected for two thousand ages. We should blush to compare this with what we see among our workmen at the present time, who at best are too negligent, and often shamefully dishonest. We see them in some places, when they have dug a trench for the foundation, fill it up with the worst materials thrown in carelessly with bad mortar, and call this a wall. They think there is no need to be more careful about what is out of sight, and then they wonder if the work fails.

If the materials were ever so good there would be danger of cracks, settlements, and irregularities, from such a practice. Stones and bricks laid corner-wise will not bear like those plac'd regularly, and there will be cavities in such work that must be crush'd together when the weight comes upon them. There is no part of a fabrick that requires to be laid with so much care as the foundation, nor is any other negligence so unpardonable.

Book II. We have recommended for all marshy and unsound earth the method of piling; this should be done with great accuracy and care, or the architect only betrays himself; but when it is properly executed, he may erect any fabrick upon it with the most perfect security. The city of *Amsterdam* is built upon piles; and many other great structures and vast masses of continued buildings that stand perfectly firm, have the same foundation for security; the piles may be on some occasions mortis'd into one another: this makes what they call dove-tail piling: and we have an instance of its strength and value in the securing of *Dagenham* breach.

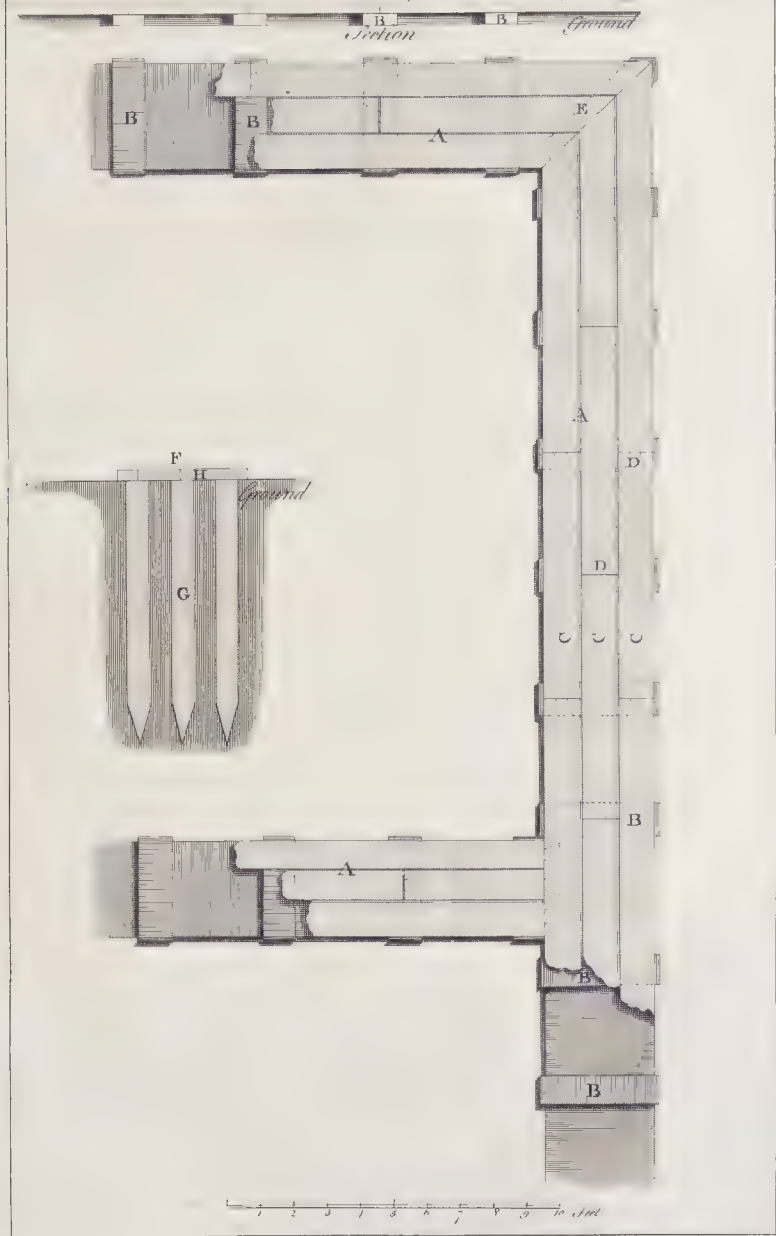
The piles for this service must be of a proper length and firmness. *Palladio* advises that they be of an eighth part of the wall in height, and that their thickness be a twelfth part of their length; but in these things some variation must be allowed, according to particular circumstances. They must be ramm'd in as thick as they can stand, and should be driven by quick and frequent blows.

We must not be content with supporting the out-walls in such places by this method; the same care must be used also for those within: The cross-walls or inner walls will in the course of the building, be so connected by the girders that the sinking of one cannot but influence the others; therefore if that necessary care be omitted, the outer walls will be injured while they stand securely upon their foundations by the effect of the sinking of those within. Both the inner and outer walls will crack from such a defect, and the whole building may tumble. Fewer piles will serve for the support of the inner or cross walls, than are needful for the outer ones; but some must be driven with care, and these walls raised regularly upon them, or all the other precaution will be fruitless.

To instruct the practical builder in the fullest manner, we have here given a plate, shewing the manner of working in planking and piling.

EXPLANATION of the PLATE.

- A. A. A. The foundation across which are first laid three inch planks, either of fir or oak, at the distance of three feet from each other; these are marked with the letter B, and drawn with dotted lines, as they lie under other three inch planks, laid lengthways of the foundation. These cross pieces are 12 inches wide, and are buried to the level of the ground.
- C. C. C. Are the planks lengthways, dove-tail'd together at their end joints, as marked
- D. D. and they are mitre dove-tail'd at every quoin, as at letter E. they are also spiked down to the cross-pieces.
- F. The manner of pile and planking where foundations are more swampy, and will not do without piles. These piles, in foundations for building, may be about six inches square, drove in depth at the discretion of the architect, and planks laid on the heads of the piles. Spiked or pin'd down with oak pins; in large scantlings, and where oak piles are drove and are to remain in water, oak pins cut square (2 inches) and drove into holes bor'd by an auger of a proper size, will last longer than iron, not being capable of rust.
- G. Are the piles which are commonly drove with a three-banded beetle; that is, three men lift and strike with it.
- H. The planking fastened down on the pile-heads.
In some sorts of soil, one thickness of planking laid cross-ways will suffice.





C H A P. IV.

Of laying the foundations of buildings.

THE architect has been taught to understand the nature of his ground, and to remedy its defects; we shall now lead him to the working upon it, or the laying of his foundation: It is here he enters upon the practice of his art, and let him be careful that he do not stumble at the threshold.

We are to suppose the ground now prepared for the foundation, and are to advance upon the laying in the materials. First then, care must be taken that the bottom or floor of the foundation be perfectly level. When it is thus prepared, the *Italians* begin with laying over it an even covering of strong oak plank, and upon that the lay, with most exact care, the first course of their materials. Whether we take this method, or begin upon the naked surface, all must be laid with the most exact and precise truth, by the rule and line. When the board plat is laid, a course of stone is the best first bed, and this is to be laid without mortar, for lime would make the wood decay, which otherwise, in a tolerably dry soil, will last for ages.

After this all the courses should follow with the same perfect evenness and regularity. If the materials be brick, let them be laid with an equal and not too large quantity of mortar: if stone, let them be placed regularly, and in the same situation wherein they lay in the quarry; for many stones which will bear any weight flatwise, and in their natural position, are of such a grain that they will split otherwise. Let the joinings of the under course be covered by the solid of the course next over it all the way up, and let the utmost care be taken that no vacancy be left in the wall, for the weight will certainly crush it in.

There cannot be a greater error than to suppose the work that is under ground should not have as much regularity as that exposed to the eye: it wants this regularity for strength, which is a consideration superior to beauty.

The evenner and better the bricks are made for a foundation, the stronger it will be in proportion; and where stone is used it should be hewn stone, or else such as is naturally of a very regular figure.

The less mortar there is in a foundation the better. Its use is to cement the bricks or stones together, and the evenner they are the less will be required for that purpose. Where mortar is used to fill up cavities it becomes a part of the wall, and not being of equal strength with the solid materials, it takes from the firmness of the building. A foundation wall, to be good, ought to be every where equally strong, and that it cannot be where there are great intervals between the more solid materials filled up with a softer matter.

Book II. We have observed that in general the thicknes of the foundation walls should be double that of those to be built upon them, but we allow for exceptions. The looser the ground the thicker ought to be the foundation wall, and it will require the same addition also in proportion of what is to be raised upon it.

The plane of the ground must be perfectly level, that the weight may press equally every where; for when it inclines more to one side than another the wall will split. Let the architect see in their full light the consequences of the least neglect in this article, and guard with a proportioned care against them.

Let the foundations diminish as they rise, but in this observe that the perpendicular be exactly kept up in the upper and lower parts of the wall; and this caution ought to be observed all the way up with the same strictness, but it is too much neglected.

Let not the young architect think we are too strict in these rules, because he sees them often transgressed by the common practice. Our work would be of little use if it were founded on such a basis: we tell the builder what should be done, not what is done. When the practice of others corresponds with our rules, let him observe how it confirms them: when it differs let him follow them, and not be ashamed of building better than his neighbours.

In some ground the foundation may be arched, and materials and expence will be saved this way, and the superstructure have an equal security. In foundations that are pil'd this is a very useful and frugal practice.

The care and caution we prescribe in a foundation will be understood to be altogether necessary to those who know the effect of faults in that part; it is the ignorant in all things who are apt to cavil. The faults in the foundation enlarge so in the upper work, that a crack of the breadth of a straw there will make a cleft of five or six inches higher: no care can therefore be too great in guarding against an accident at once so unfightly and so dangerous.

C H A P. V.

Of WALLS. Their form and diminution.

THE foundations being prepared as directed in the preceding chapter, the next thing is the raising the walls upon them : these may be properly called a continuation of those foundations, and nothing is of so much consequence as the raising them in a workmanlike manner. The foundation walls are to diminish in thickness as they are wrought up, and that diminution should be continued to the top of the building, the workman still taking care to keep the center of the wall all the way strait from the bottom of the foundation.

Walls in this country are principally built of one of these two materials, brick or stone ; and in building about *London* brick is much the most common. We see, in some parts of the kingdom, walls built of flints cut into a tolerably even form in a very surprising manner. There are at this time some fine walls standing of this material in the city of *Norwich* ; and it is introduced in the old gate at *Whitehall*, and some of the adjoining buildings of the same period. This was an art unknown to the antients, and it is lost again at this time ; but it was strong and beautiful.

In the walls of common houses, which are of brick, the general diminution from the bottom to the top, is one half the thickness at the bottom ; the beginning is two bricks, then a brick and half ; and at the upper part one brick, thickness. In larger edifices the walls are made proportionally thicker, but the diminution is preserved in much the same manner.

Some walls are plain and continued, others are made with intermissions, where there are columns or pilasters : of these we shall speak in some succeeding chapters, the plain walls are our subject here, where we treat only of the essential parts of all columns and pilasters are ornamental.

When a building is to be strong, the walls must have a proportionable thickness. We have said that they need not be all the way of an equal diameter ; the decrease of this is what we call the diminution of a wall, and we have observed already that this diminution should be made equal on each side, that the load may be exactly in the middle. The wall should be carried up all the way exactly perpendicular to the ground work ; for the right angle it makes, in this case, is the foundation of strength and firmness.

If the wall be composed of two kinds of materials, as stone and brick, the massiest and heaviest are to be used in the lowest part, as being fitter to bear than to be born, and the lightest at the top.

The diminishing in thickness as the wall rises saves both weight and expence : but it is not absolutely necessary ; for if the wall were carried up in a perfect perpendicular from bottom to top, and all the way of the same thickness, it would not for that reason be less strong. In this case the keeping the perpendicular perfect would be the great difficulty

Book II. and the great article of merit. We find the antients were able to do this: for we see, in the remains of their works, walls thus carried up to an exorbitant height; but our architects are more ready to be astonished and admire, than to study and imitate, them.

The great rule for the thicknes of the wall in all buildings is, that it be proportioned to the weight it is to support. This is to be carefully computed, and there will be no danger of the strength of the edifice; for the great occasion of that fault is the not observing this proportion. A wall that stands alone is its own burthen and support; the higher parts press upon the lower, and the lower bear up the higher; this is all, and the structure of it is therefore plain and easy. In a larger building the arches, roof, and the floor, are the burthen; the walls are the support: let the architect therefore compute the weight of the one according to his plan, and to that proportion the strength of the other.

The thick walls that bear directly upon their foundations press from top to bottom; the arches press sideways, and to know how much, we must measure their convexity. The floors and the roof have a great pressure perpendicularly, and a little obliquely: all this must be carefully considered, and upon this depends the computation of the general load, and of the necessary proportioned thicknes of the walls. The strength of a building depends upon the force of its supports: and the great art on this head is that of giving a plain wall the utmost strength of which it is capable.

We have advised the young architect to be careful in this computation, that he may know what strength his walls ought to have, for it is as easy to make them too thick as too thin, and either extreme is equally unworthy of a good builder: too much thicknes in walls not only is the expence of a great deal of needless money, but it gives the edifice a heavy aspect. The great art is to join strength and delicacy. We see the former consulted in many of our modern buildings at the expence of the latter.

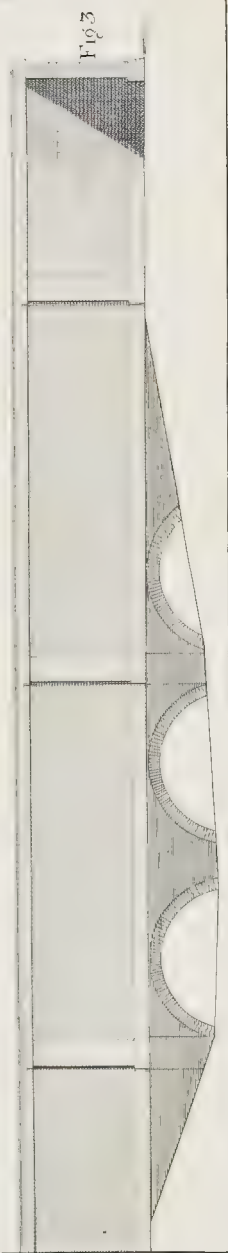
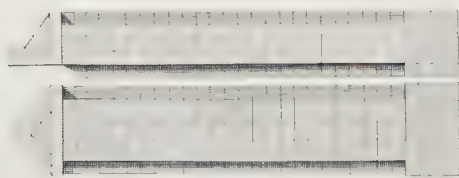
The antients had an art in joining these that we have lost. They were sparing of stone, but they never grudged iron work, and by the means of that assistance, and of a perfect truth in their perpendiculars, they have left us those models we despair of copying. Our houses tumble down after a few years for want of strength; and we have consecrated the heaviness of our work in most of the modern churches.

There is one farther particular which regards strength in the structure of a plain wall, and that is the fortifying of the angles. This is best done with good stone on each side, which gives not only a great deal of strength but a great deal of beauty.

A wall that is raised over arches and pillars, provided they be judiciously directed, and the work carried on in the same manner, stands as firm as one that is begun from a plain foundation.

Pilasters properly applied are a very great strengthening to walls; their best distance is about every twenty foot, and they should rise five or six inches from the naked of the wall. A much lighter wall of brick, with this assistance, is stronger than a heavier and massier built plain.

Garden or Fence Walls Built of Brick



P L A T E X I I .

Garden or Fence WALLS built with Brick.

FIGURE I.

The most common and least expensive, being but nine inches thick above the plinth, with pilasters at twelve feet distance from each other; one foot six inches broad, projecting four inches; and covered or coped, as described in the section A.

FIGURE II.

A wall one brick and a half thick, with pilasters one foot ten inches broad, at twenty feet distance, projecting four inches. When built on arches, as in this figure, they are very useful in gardens for planting fruit trees against them.

FIGURE III.

A wall of the same thickness on arches, with pilasters, at a somewhat greater distance, supposed to be built where ground lies hollow, and requires to be filled up to a level.

This and the second figure are coped with brick, as drawn on the section. Letter B.

C. Is the profile or four inch projection of the pilasters.

D. Is the plinth, four course of bricks above the surface.

P L A T E XIII.

*Shews 1. The PLAN; 2. The ELEVATION; and 3. The SECTION of part of
a Building: explaining how walls are built of brick and stone.*

A. *The ground plan.*

B. *The elevation cas'd with stone, which stone at a medium should be nine inches thick, and this is called asbler.*

C. and D. *In the elevation and section are the foundation of the front wall, four bricks and a half in thickness.*

E. E. *Are inverted arches under all the apertures, which add great strength, and are a means of preventing cracks.*

F. *Arches turned over the windows behind the stone-work, which springing from the bond stones, G. G. that go through the walls, discharge the weight from the window-heads, and prevent the straight stone arches from sinking.*

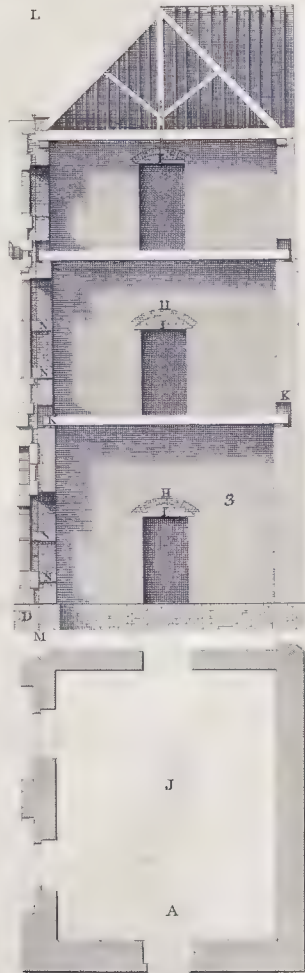
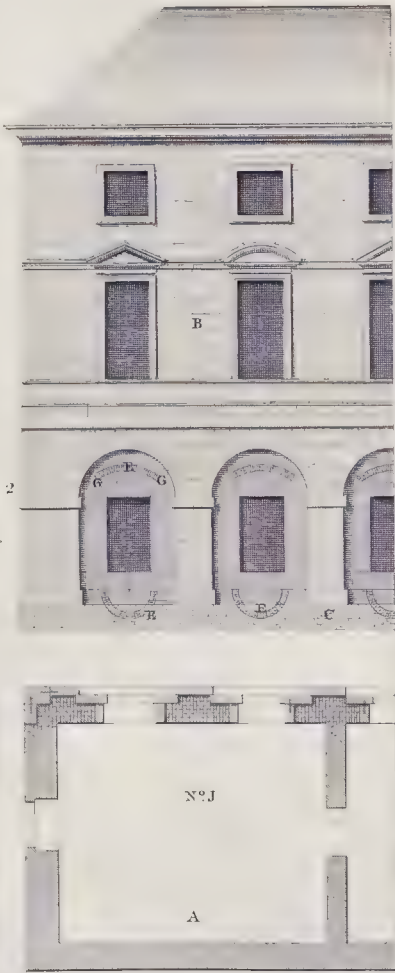
H. *Settles arches over the doors in the section, where lintels should be first laid. The arches are to take their springing from the outside of those lintels, that when time shall decay the timber, the brick arches may keep their place.*

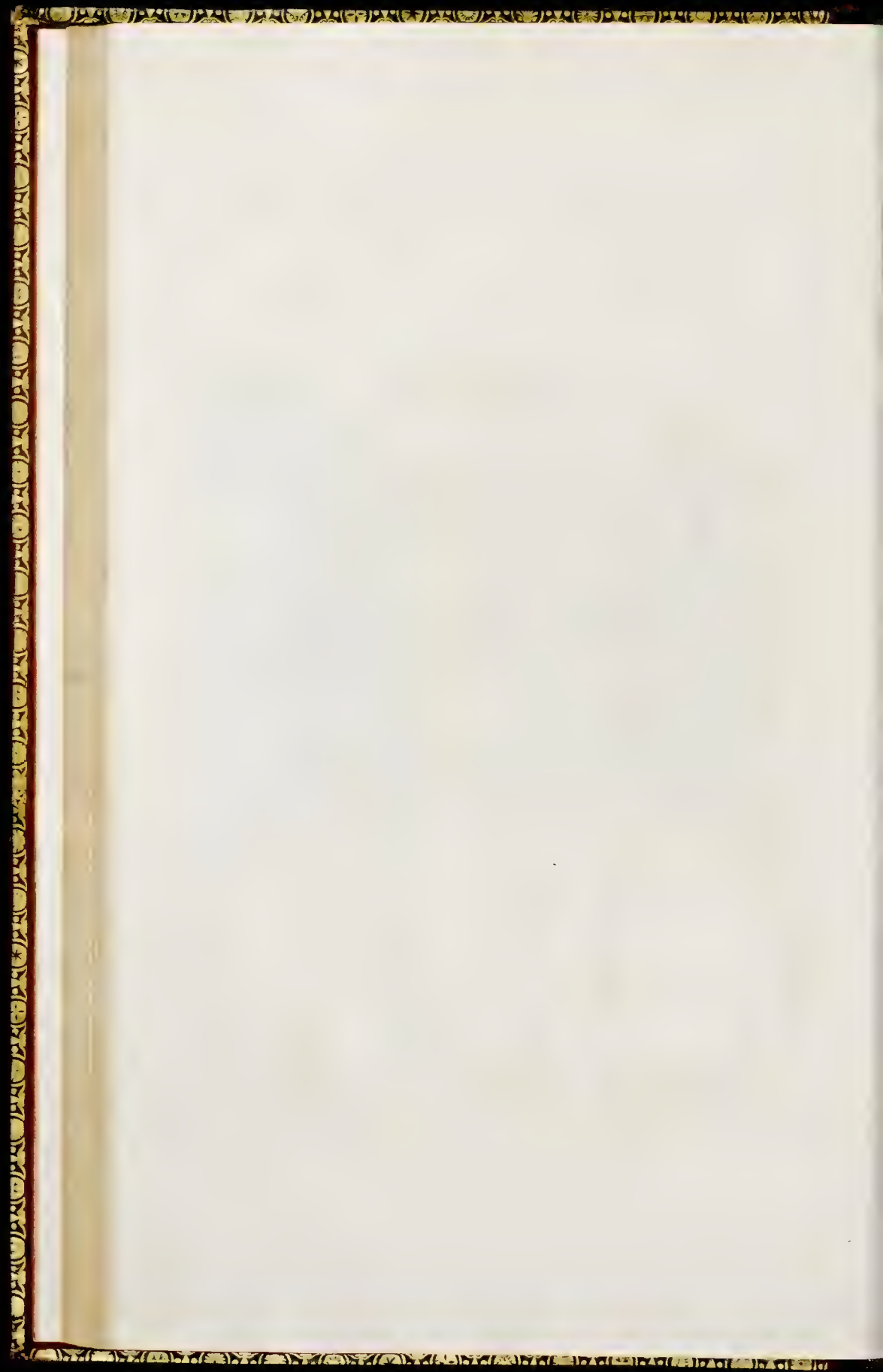
I. I. *The lintels.*

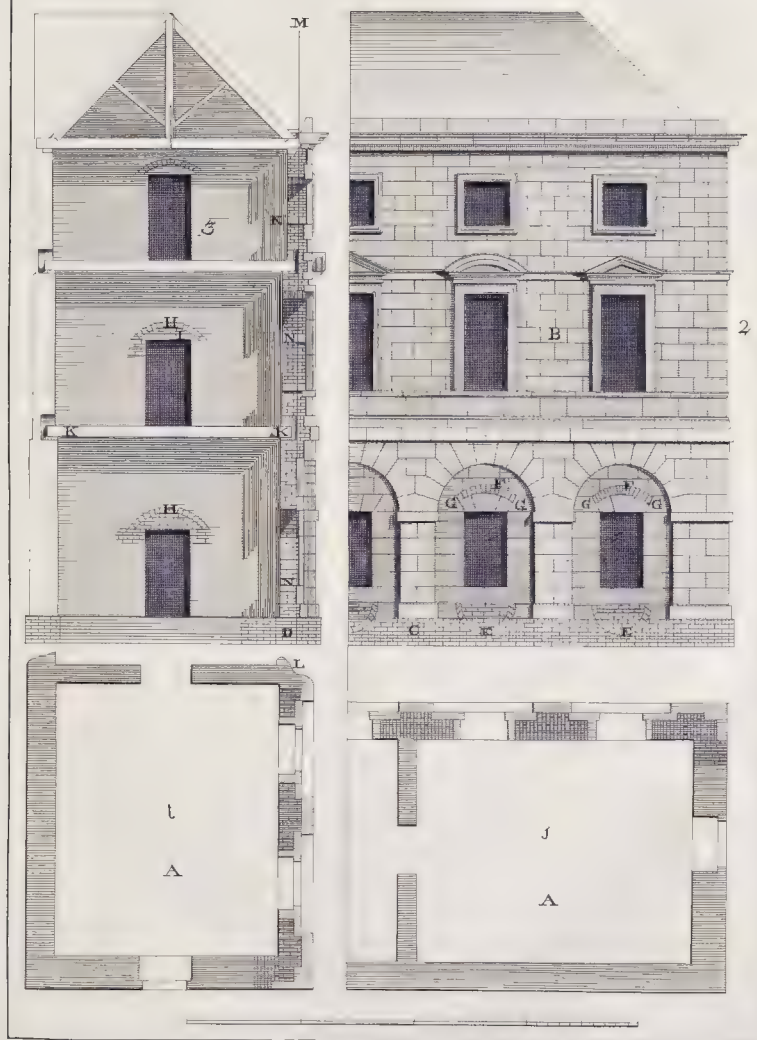
Arches should also be turn'd over the ends at all the beams that lye in the walls, as marked in the section with K, that they may have free air: under these should be laid pieces of oak or fir, which are called templets. By this method the ends of the beams will remain sound as long as any part of them. In the common practice the ends decay first.

L. M. *Is the perpendicular line of the wall cas'd with stone, and back'd with brickwork. In diminishing the wall, care should be taken that it be on each side the said perpendicular line equal.*

N. N. *Are bond stones which are a tie to the front work, and also keep the brickwork from sinking, which it otherwise would do more than the stone facing: for there being so many more joints, and those joints so much thicker than in the stone, this must sink more, and consequently draw the front out of an upright.*









THE XIIIth plate, in the course of this Work, having, by the misconduct of one engraver, and the shortness of time barely allowed to another, been delivered in a manner not equal to the rest of the engravings; Mr. WARE, desirous of making acknowledgments in his power for the favourable reception with which the publick have honoured this work, has made a new engraving of that plate with his own hand, which is given gratis in the present number; and the subscribers are desired to insert it in its place, in number XI, instead of the other.

In brick walls of every kind, it is an exceeding addition to their strength to lay some chief courses of a larger and harder matter, for these serve like sinews to keep all the rest firmly together, and are of very great use when a wall happens to sink more on one side than another. Chap. 6.

In the most perfect way of forming the diminution of walls, the middle of the thinnest part being directly over the middle of the thickest, the whole is of a pyramidal form: but when one side of the wall must of necessity be perpendicular and plain, it must be the inner, for the sake of the floors and cross walls. The diminished part of the outside may be covered in this case with a fascia or cornice, which will be at once a strength and ornament.

As the openings in a wall are all weakenings, and the corners require to be the strongest parts, there never should be a window very near a corner. Properly, there should always be at least the space of a breadth of the opening firm to the corner.

This is the general idea of a wall, and according to these principles it may be raised of any needful height, and for the support of any weight above: and the young architect being thus acquainted with the form, we shall next lead him to the consideration of its construction of whatsoever materials.

C H A P. VI.

Of the antient stone and brick walls, and the manner of constructing them.

THE antients erected their walls sometimes of stone and sometimes of brick, as we do; and by the remains that are yet extant of the several kinds, we find they had various ways of constructing them. At present, architecture in this, as in its other branches, is reduced into a much narrower compass than it has been in earlier times; but as it is not impossible to improve upon the present practice, and as the works of the antients are in all respects the best models we can follow in the attempts of improvement, we shall here give a short recital of their several manners of constructing them, before we mention those of our own time.

Their *chequer work*, or *reticulated wall*, was at one time famous, but was sooner out of use than the others. This had corners of brick, and courses of brick to bind the whole: there were about three courses at every two foot and half; the inward part of the rest was made of cement, and the facing was chequered.

Their *common brick walls* were made with the two sides of good bricks, and the middle was filled up with mortar and brick-bats rammed together.

Their *cement walls* were composed of cement with pebbles and earth laid in a rough manner, sometimes with and sometimes without mortar, but the corners were strengthened with brick or stone, and at every two foot height there ran courses of brick work to bind and strengthen them.

Their *rustick walls* were built with rough and irregular stones of various shapes and sizes, which they laid together as evenly as they could by means of a leaden rule:

N^o. 11;

H h

this

Book II. this being bent according to the place where the stone was to be laid, shewed how it was to be formed and placed.

Their *squared stone walls* were made of larger and smaller stones regularly cut and squared, and laid with great beauty. A course of larger and a course of smaller usually were laid over one another. This was a wall of great beauty and great strength.

Their *coffer-work walls* were made of rough and ragged stones with a strong mortar. These had their names from the manner of working them. They made a kind of oblong coffers of boards distant by the intended thickness of the wall, and into these they threw ragged stones, cement, and earth at random; but they began with a course of brick work, and made courses also between. The mortar we use at this time would not hold such rude materials together in a wall; but we have observed in the chapter on that head, that the antients were much more careful both in the materials and manner of working it: we see an instance of the effect of that care and pains, for there are walls of this structure in which no trowel was used, but the force of the mortar held the most uneven stones; and they are very strong after two thousand years.

There occur also remains of a considerable antiquity, in which we see a kind of cofferwork, of a solid substance, with this rough mixture within, the coffer work being the essential part of the wall: in these two rows of good free-stone were laid at a considerable distance, and there ran cross-bars of the same stone from space to space between them: the rest of the inner space was vacant in form of great square coffers, and this they filled up with rough stones and mortar poured in together, which hardening with the rest became a solid part of the wall.

Vitruvius saw the objection to the chequered wall, that it would be more liable to accidents than the others; and it was found so, and therefore disused.

The double brick walls, with cement and brickbats between, are extremely strong and fit for great buildings: we see remains of them in the rotunda and in the baths of *Dioclesian*. We have examples of the cement walls in the amphitheatre of *Verona*: the walls of *Præneste* afford an instance of the rustick, and they paved their streets in the same manner. The square stone walls are to be seen in remains about the temple of *Augustus*, also of the antique coffer work kind, where the faces and cross work is stone, and the filling up of the coffers mortar and rough stones.

Imigo Jones observes that he had seen the rustick wall of the antients in a house going to *Naples*, and that it looked very well; and that the squared stone wall made of stones of different bignesses has a grand look in many of the antient buildings.

We see in all these with what knowledge both of the nature of materials and the manner of disposing them, the antients built their walls: what strength, solidity and beauty. We have all their materials, we shall next observe in what manner we employ them.

C H A P. VII.

Of the modern construction of stone and brick walls.

WE build walls of part stone, or entire brick, and sometimes face them with hewn stone, or cover them in part with plaister wrought into a resemblance of such a stone covering. When brick walls stand single we frequently cope or cover them at the top with stone: but in examining through the whole course of the proceeding, we shall find that we have neither the strength, beauty, nor variety of the antients in this great part of architecture.

We rarely see instances of walls of entire stone rough or wrought without any facing of another kind, and it is only in the most expensive of our buildings the others make any tolerable figure: what we commonly see about houses is a facing of cut stone over a wall of ordinary brick work, better or worse: and as to brick walls, instead of the double facing of the antients, which was filled up between with a rougher stuff, our walls are usually faced with good brick on the outside, and wrought up a coarser kind inwardly, the inner surface not being seen when the building is finished.

In regard to the manner of constructing a brick wall, we are to caution the young architect that in summer he lay the bricks as wet, and in winter as dry as he can; for this is the way to make them bind the better with the mortar.

In summer as soon as they are laid they are to be covered up, to prevent their drying too fast, the mortar in that case losing half its binding quality; and, for the same reason, they are to be covered yet more carefully in winter, for rain is a great enemy to the strength of mortar; and frost is worse.

In all cases let him take care that the angles of his walls be well united together, for if the adjoining walls be not wrought up at the same time they never close so well.

Finally, that all the parts of the building where there are walls be raised and finished at the same time, because then they settle equally every where, and there are none of those cracks and clefts which are so great a blemish in the building and scandal to the builder.

Treating of walls, we should not omit to mention those inferior kinds which have been once much used, and are in some places to be met with now: for though brick and stone are the general walls at this time, they do not utterly exclude all others.

In framed timber houses there are sometimes used what may be called walls of lath and plaister; and in small buildings, made altogether of wood, there are what may be

Book II. called boarded walls. The plaister walls are chiefly used in ordinary timber buildings : they are composed of loam or coarse mortar spread over the lathing, which is to continue from beam to beam, and the whole is covered afterwards with a finer mortar. Sometimes the timber work is left naked, sometimes the whole is covered with lathing, and then with loam and mortar : this is the handsomest manner of doing it, and frequently in this way of using it is rough cast over, and while clean makes a pretty appearance.

In what are called boarded walls, the great care is to secure them very well by painting without and by plaistering within, in which case they will endure a very considerable time, and will be no more in danger of accidents by fire than other materials.

These are a very inferior kind, and only fit for meaner purposes, but in a general account of walls it would have been wrong to omit naming them. We shall from these proceed to the consideration of those most expensive and elegant walls which we raise of hewn stone for churches and other elegant buildings. In these the better the stone be wrought the smaller will be the joints, and this is a great excellence in that kind of building. We see the antients have been so accurate in the cutting of their stone on these occasions, that in the remains of many of their great buildings we can scarce perceive a joint, but the whole looks as if of one entire rock wrought to that exactness. There is indeed thus much to be said on this head, that they in reality did work down the faces of their stones after their walls were erected, their whole care before being to cut the squares that were to join with a perfect exactness. This contributed greatly to the strength as well as beauty of their buildings. We see proofs that this was their manner of working among their remains : in some the faces of the stones are yet rough as they were laid, and in others the very marks of the tools shew how they were wrought.

In buildings of vast extent and expence, they sometimes wrought only the imposts of arches, the capitals and cornices, leaving the rest rough as they laid it in. This was their manner of executing what we call rustick, in distinction from those walls which they finished up in every part.

There is nothing into the spirit of which we have less entered than this rustick of the antients in their walls. We see they have done it, and therefore we conclude it to be right : but we should examine why they did it, and conform ourselves to the same conduct. They always used this form in their largest buildings, we have therefore no authority from them for using it in small ones.

In our stone walls for elegant edifices this smallness of the joints should be our great concern, and to this end the sides of the stone where they are to join cannot be wrought with too much care and exactness. The use of thin sheet-lead is also excellent : and, upon the whole, as it concerns only buildings of great expence, it is an article in which the price of workmanship never should be spared.

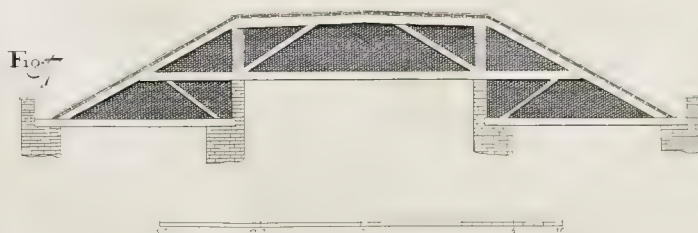
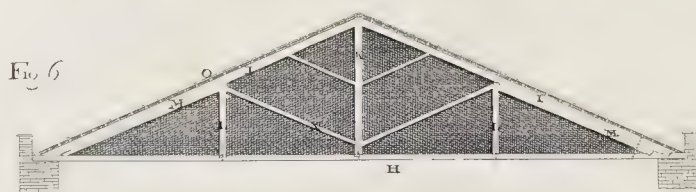
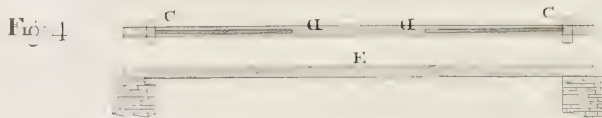


fig 1

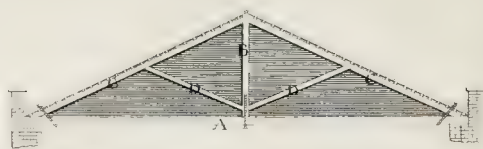


fig 2

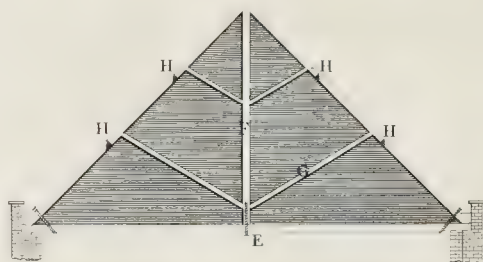


fig 3

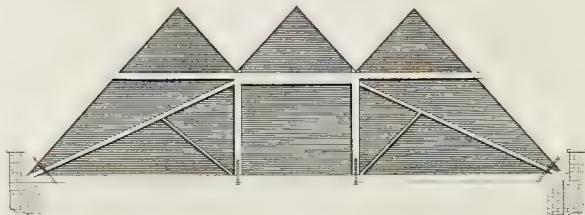


fig 4



10 5 0 10 20 30 40 50

Explanation of the three Plates of Roofs.

PLATE XIV. Fig. 1 and 2. Shews how plates laid on walls are join'd together.

Fig. 3. The manner of putting beams together of three pieces, where extraordinary lengths are required. These will be equally strong as if they were of one piece of timber. A. The 3 pieces laid down and struck out; the scarf or lap is supposed to be 10 feet, divided into 6 lengths of tables, the hatch'd ones are sunk an inch or more, and when turn'd up one will fit into the other with great exactness, which must be bolted together as in letter B.

Fig. 4. Is the upper face of a truss beam, where C D. is $\frac{1}{2}$ of its length: it is morticed at D. 4 inches down; and as deep at C. as the templet on which it lies: this must be beaded with a right butment, i. e. square with the top or bottom of the braces.

It is supposed to span 40 feet.

E. Upright of the said beam, with the disposition of its braces.

Fig. 5. Another kind of truss of the same length, 40 feet between wall and wall.

F. Is a short beam 13 feet 4 inches, and placed on the back of the long beam G. The side braces will be about 13 feet 4 inches long, 6 inches by 4 inches square, with iron straps to clasp them and the upper beam, which is to be bolted to the lower beam G. The upper beam F. will be 12 inches by 10 inches square, which receive the ends of the binding joist in the middle; and these on each side will lie upon the under beam G. 12 inches by 12 inches square, the upper binding joists to be 4 inches by 7 inches, the under ones 6 inches by 4 inches square, the ceiling joists 3 inches by 2 inches.

Note, The iron straps must be so ordered that they come not foul with the binding joists.

Fig. 6. Is a large truss roof which spans 60 feet between wall and wall; its principals are taken from a bridge in Palladio's 3d book of architecture, chap. 7.

The beam H. 65 feet long may be made of 3 lengths of timber put together as before described, and the following scantlings will be sufficient. Viz.

H. Beam	In.	In.
I. L. Principal rafters	12	by 8 square.
K. Middle king post	10	8
L. L. Side king posts	10	8
M. M. The under rafters to the principals	8	8
N. N. Braces	8	8
O. O. Level rafters on which boarding is nailed to receive sloping,	6	3 $\frac{1}{2}$

This roof is framed in an uncommon way, the tenons being made in the head of the king post, and the mortices in the head of the principal rafters, as is shewn more at large Fig. 3. Plate 14. The tenons may be about an inch thick, made in the middle, which will admit of strong butment cheeks on each side.

Fig. 7. Is framed after the common manner, except the crown piece.

PLATE XV. Fig. 1. Is a truss that spans 44 feet, whose perpendicular length is equal to $\frac{1}{2}$ part of the beam.

A. The beam	In.	In.
B. King post	10	by 8 square.
C. Principal rafters	10	8
D. Braces	8	6
Small rafters	5	3 $\frac{1}{2}$

Fig. 2. Is a truss whose perpendicular height is equal to half the length of the beam, 22 feet, and is framed with purlins for the small rafters to go downward, to receive laths for laying tiles on.

The beam E. 44 feet long is	In.	In.
F. and G. Principal rafters and king post	10	by 8
H. H. H. H. The purlins.	8	6

The lower purlins must be framed in flush with the upper side of the principal rafter, and the upper one framed 3 inches below, for the upper small rafters to lye upon it, which small rafters are 4 inches by 3 inches square, and the under one 5 inches by 3 inches, and this is called the common pitch of roofs.

Fig. 3. Is a truss of 54 feet span, whose sides or principal rafters are made to the common pitch; and for the conveniency of gaining room in the garrets, it is finished with 3 small roofs.

Fig. 4. Is the same kind of truss, leaving out the 3 small roofs, and making the top a flat, on which a ballustrade may be placed, or a breast work raised as in the figure.

PLATE XVI. Shews a kind of trusses properly adapted for roofs to churches.

Fig. 1. Is the most uncommon and best: this is framed in the manner described at large in the 3d figure underneath it.

The scantlings sufficient for this truss are;

	In.	In.
A. The upper beam	12	by 8 square.
B. B. Principal rafters	10	8
C. C. Lower beams	10	8
D. D. Truss braces from the lower beam to the upper beam	10	8
E. King post	10	8
F. Braces to the king post	8	8
G. Middle rib for the compass ceiling, to be in 4 parts	8	6
H. H. The side ribs ditto	8	6
I. I. Puncbeons on the top of the columns	10	8
K. K. Truss braces to the middle rib	6	6
L. L. Braces to the side ribs	6	6

Scantlings to the 2d figure.

	In.	In.
A. The beam	12	by 9 square.
B. B. Puncbeons on the top of the columns	12	9
C. C. Principal rafters	12	9
D. King post	12	9
E. E. Braces	6	6
F. F. Under short beam	12	9
G. G. Braces to it.	8	8

Fig. 3. Explains the manner of framing truss roofs two different ways; one side shews the king post A, whose scantling is 10 inches by 8 inches square: this has a 4 inch mortice at B, which receives the 4 inch tenon letter C, the head of the principal rafter. D. The beam has a like mortice at E, which receives the tenon F, which is the foot of the principal rafter G. The other side of the king post A, has an inch and quarter tenon in the middle of its thickness, as at H, made fit to receive the mortice I, in the head of the principal rafter. The like tenon is made at the other end of the beam D, as at K, and there is a mortice in the foot of the rafter L, to clasp the same.

In this method of framing, which is quite uncommon, care must be taken that it be done with great exactness, that the buttments may be good.

As there are various proportions for the pitch of roofs, we have here inserted the several degrees that are most useful, from the pediment pitch to that of the equilateral triangle, called the pinnacle, and described by

- Fig. 4. A. Is the pediment pitch.
 B. Rises $\frac{1}{4}$ the length of its base line.
 C. Rises equal to one half.
 D. Is the medium between that and the pediment.
 E. Is its height given by the length of the rafter, equal to $\frac{3}{4}$ of its base line.
 F. The equilateral triangle.

Figure 1

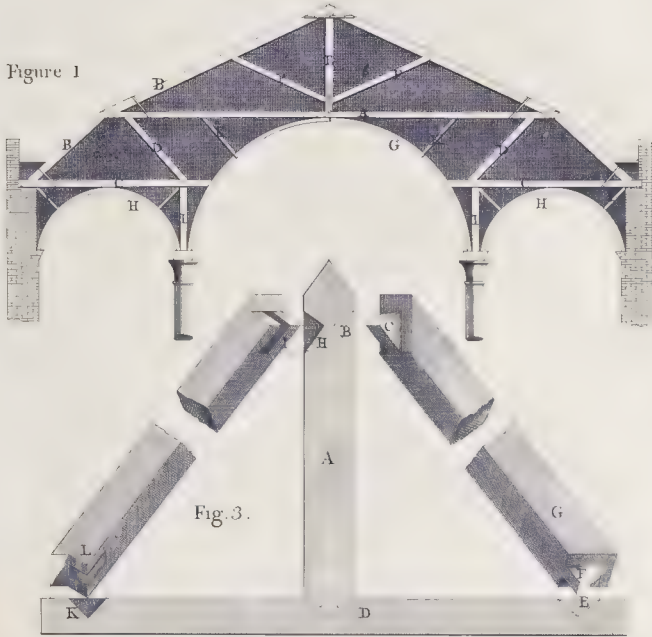


Fig. 3.

Fig. 2.

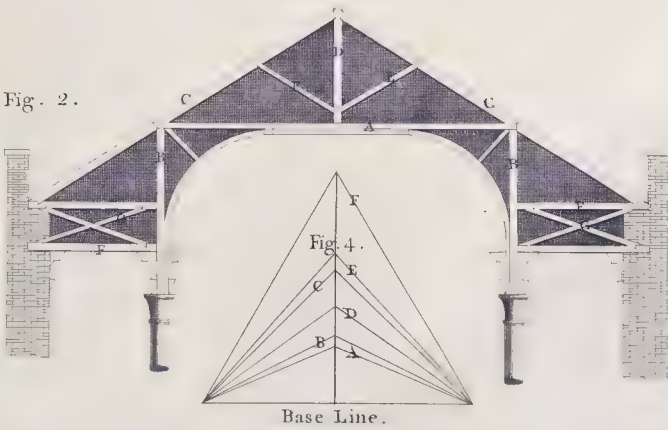


Fig. 4.

Base Line.



C H A P. VIII.

Of Roofs.

THERE is no article in the whole compass of the architect's employment that is more important, or more worthy of a distinct consideration, than the roof; and there is this satisfaction for the mind of the man of genius in that profession, that there is no part in which is greater room for improvement.

In order to understand rightly in what manner to undertake such improvement, he must first comprehend perfectly the idea and intent of this part of a building, and what is generally known concerning its structure.

The great caution is, that the roof be neither too massy nor too slight: in the one case it will be too heavy, and in the other too light, for the house. Both extremes are to be avoided, for in architecture every extreme is to be shunned; but, of the two, the over weight of roof is more to be regarded than too much lightness. This part is intended not only to cover the building, but to press upon the walls, and by that bearing to unite and hold all together. This it will not be massy enough to perform if too little timber be employed, so that extreme is to be shunned; but in practice the great and common error is on the other side; and he will do the most acceptable service to his profession, who shall shew how to retrench and execute the same roof with a smaller quantity of timber: he will by this take off an unnecessary load from the walls, and a large and useless expence to the owner.

The roof of a house properly expresses the frame of wood work which is raised upon the walls, and the covering of slate, tile, or lead, which is laid over it; and thus the architect is to understand it, for he is to compute its weight entire when he considers the proportion of its pressure to the supports: but, in the common manner of speaking, only the carpentry or timber work is understood under this term.

The form of a roof may be very various. The three principal kinds are the flat, the square, and the pointed: to these we are to add the *pinnacle* roof, the *double ridged*, and the *mutilated* roof. This last is very beautiful, and is called the *mansard* roof, after the name of a *French* architect its inventor. Lastly we are to name the *platform* and *truncated* roof, and adding to all these the *dome*, we shall have the list of the principal kinds. We might add here the *ogee* roof, which is a piece of *French* architecture neither commodious nor graceful; and some others which fancy often prefers to better kinds: but of these we shall treat more largely hereafter, the intent in this place being to give a general idea of the roof, its nature, proper weight, and proportion.

When the roof is pointed, its best proportion is to have the profile an equilateral triangle. In the square roof the angle of the ridge is a right angle; this therefore is a middle proportion between the pointed and the flat roof, which is in the same proportion as a triangular pediment. The *pinnacle* roof has its name from its form, being carried up in resemblance of a *pinnacle*. The *mansard* consists of a

Book II. true and a false one; the false roof lying over the true. The platform roof is common in the East, and the truncated kind approaches to the nature of it. This is cut off at a certain height instead of rising to a ridge, and this part is covered sometimes with a terrace, and encompassed with a balustrade. Of the dome we shall speak in its place, and of the other species of roofs. This account is sufficient for the general idea of the nature and form of this part of an edifice.

Whatever be the form of the roof, the architect must take care in the construction to preserve its weight equally on the separate parts, that it may not bear more upon one side of the building than another: and in the construction of the whole edifice he will do well to contrive that the inner walls bear their share of the load; that more than is needful be not laid upon the outer ones.

The roof surrounding every part of the building, and pressing equally upon every part, becomes what it was intended, a band of union and firmness, as well as a covering to the whole. It preserves the walls also by throwing the rain off from them. The making the middle or inside walls assist in supporting the roof, is best done by making them support the girders; and this has many ways an excellent effect; for a roof in this case is not in danger of falling from the rotting of the end of a girder, which is otherwise very often either entirely destructive to this part, or at least an inconvenience very difficultly supplied.

C H A P. IX.

Of FLOORS.

WE have reserved the mentioning of floors till we had considered the walls and the roof of the edifice, because they are introduced in this order in the building of a house; the practice being not to lay them till the house is enclosed and covered in, because otherwise they would be injured by the weather. We are to advise the young architect to get the boards ready long before, because although they are not to be used of a considerable time, it will be of great advantage to let them stand to season. As soon therefore as the plan of the building is laid, and the dimensions of the several rooms allotted, let the boards for the floor be cut and rough-plan'd; then being carefully put by in a dry airy place, they will be in a good measure seasoned by that time they are put to use.

The floors of all the rooms upon the same story, and of all the passages between them, should be perfectly even: not so much as a threshold should be suffered to rise above the level of the rest; and if in any part there be a room or closet whose floor is lower than the general surface, it should not be left so, but raised to the level of the rest, what is wanting being supplied by a false one.

We have hitherto spoke of timber floors, by which name is properly expressed nothing more than the covering of boards on which we tread; but in the usual acceptation it stands for the whole body of the work in this part; comprehending the fram'd work of timber which supports the boards, as well as the covering itself which is fix'd upon it. But beside these, which are the most general, and as it were universal floors of common houses about *London*, there are several other kinds used in country buildings, and by some in the most elegant and highly finished.

The common floors used in mean buildings, are made of loam well beaten and tempered with smith's dust, and with or without an addition of lime. Some also make them of pure clay, ox blood, and a moderate portion of sharp sand; these three ingredients beaten together very thoroughly, and well spread, make a firm and good floor; and of a beautiful colour.

In elegant houses the floors of this nature are made of stucco, that is, of plaister of *Paris* beaten and sifted, and mixed with other ingredients. This may be coloured to any hue by the additional matter, and when well worked and laid makes a very beautiful floor, some of it looking like porphyry.

Beside these, we see halls and some other ground-rooms pay'd or floor'd with marble or stone, and this either plain or dotted, or of a variety of colours; and sometimes in a variety of figures, as the boarded floors in some rooms are inlaid with wainscot, and other handsome woods in various forms.

The use of carpeting at this time has set aside the ornamenting of floors in a great measure; it is the custom almost universally to cover a room entirely; so that there is no necessity of any beauty or workmanship underneath.

In country buildings floors are frequently made also of bricks and tiles. These also, according to their shapes, may be laid in a variety of figures; and they are capable also of some variation of colour, according to the nature of the earth from which the bricks or tiles are made. These may be laid at any time; but for those of earth or plaister they are best made in the beginning of summer, for the sake of their drying. We see these miserably executed in the country, partly through ignorance, and partly through carelessness: and in good houses in *London*, where there are stucco floors it is too common to see frightful cracks across them. In this the workmen are generally to be censured: stucco floors are very common in many parts of *Europe*, particularly at *Venice*, where it is rare to see a crack among a thousand of them. This is more owing to the thorough tempering and working of the materials, than to any secret in the composition.

The architect sees here a variety of materials before him: the boards and plaister are in general the kinds to be used in upper stories, the other heavy sorts being in a manner confined to the lower: but we shall give him this caution, that whatever kind he takes, it be finished with care and exactness; if he will look upon the floors in general in *London*, he will see there is reason for the caution.

C H A P. X.

Of CHIMNIES.

IN most things relating to building, we may refer the modern architect to the practice of the antients for models from which to work, and examples by which to improve; but in this matter of chimnies we have not that resource. The accounts the antients give of them in their writings are short and trivial; and the rules of *Vitruvius* for constructing them are full of obscurity. Indeed they were less acquainted with them because they had less necessity for them: they lived in a warmer country than ours, and they had the use of stoves; so that the construction of chimneys was little regarded. With us the necessity of them is so absolute, and the inconveniences that frequently attend them are so great, that nothing more essentially regards the profession of the architect than their proper construction and disposition.

Fires are necessary, and we wish the smoke to pass free away: in this the effect of the wind is very great; and to be secure of every advantage in that respect, the builder is to have the danger of smoke in his eye, from the first disposition of the building. Let him consider first the nature of the region, and from what quarter the winds most frequently blow, or most furiously: and let him, according to this consideration, dispose the rooms that shall have most need of fires in places where these winds have least power. This is much earlier than builders usually begin their provision against smoky chimneys; but their not taking the precaution in time is one of the principal reasons why the fault is so difficult to be remedied. He who shall have begun thus can have only the ill construction of a chimney to combat with in the attempt of remedying an error; he who has neglected it may have the disposition of it, which is often impossible, to alter.

The common causes of smoking are either that the wind is too much let in above at the mouth of the shaft, or the smoke is stifled below: and sometimes a higher building, or a great elevation of the ground behind is the source of the mischief. Finally, the room in which the chimney is, may be so little or close, that there is not a sufficient current of air to drive up the smoke.

When the architect has thus acquainted himself with the several causes of the smoking of chimneys, he will know by what means he may most rationally obviate such inconveniences; and how he may remedy the accident where in spite of all his care it shall happen: when the cause is not considered this is impossible, and it is no uncommon thing to see much labour bestowed perfectly in vain, because the fault is misunderstood.

As smoking is the greatest inconvenience that can attend this part of architecture, we have set out in this place with its causes: these we shall now caution the architect to obviate by a proper disposition and proportion of his rooms, and a judicious construction.

tion of the chimney itself. We have seen that the two great causes of the inconvenience are the smoak's being driven back, or lingering in the funnel: the driving back is an accident from without, the lingering in the funnel is from some error within, either in the construction of the funnel itself, or of the room where the chimney stands.

The chimney may be divided into two parts, the first containing the opening, the hearth, and the funnel; the other the jambs or sides, the mantle-piece which rests upon them, and what is called the chimney-piece which comes over the mouth. This is the common distinction, and according to this the first part is what concerns use, the rest ornament.

A great deal depends upon the opening; if this be too small and low, the smoak of itself naturally is check'd at the first setting out, and missing its way returns into the room; and on the contrary, if it be too large and high the same happens, because if there be too much room for the air and wind, the smoak will by that be driven into the room. The proportions of chimneys we shall give hereafter, when we treat of their ornamental parts, and the rooms in which they are to stand; here we are enquiring only into their general structure. The mouth of the chimney, or that part which joins the back, should be something smaller than the rest; for this will make a stop against the smoak when it shall be coming down into the room: and meeting with that resistance it will often return back: indeed the making the funnel narrowest at bottom is a very great article in the preventing smoaking, because it assists doubly; the smoak getting the easier up, as the space is all the way wider, and coming down with more difficulty as it grows narrower. Yet this prudent caution must not be carried to an extreme, because then the smoak will linger in the upper part, and all the force of the draught below will not be sufficient to send it up.

Another very good method to assist the discharge of the smoak is the making two holes one over another in each side of the chimney; one of these is to go sloping upwards, and the other sloping downwards, so that the smoak will always find way thro' one of them.

The placing a moveable vane at the top of the chimney is also often successful; this keeps the opening of the funnel screened against the efforts of the wind, let that blow which way it will.

To these we are to add two other contrivances more ingenious than useful; the one is the carrying up the funnel spiral, to prevent the easy descent of the smoak; and the other the hanging an æolipile in the lower part of the chimney, to drive it up by blowing. This æolipile is a hollow ball of brass filled with water, with a small opening in one part; this being hung up just over the flame blows forcibly out at the hole as the water heats.

These are the several methods commonly used for the remedying as well as preventing the smoaking of chimneys; but let the judicious architect proceed upon the most certain principles in obviating the danger. Let him observe a due proportion between

Pl. 11. the size of the room and that of the chimney: let him be careful to place the doors in such manner that they may most favour the carrying up of the smoke; and to give the sides a proper projection, and the back a due distance. As this falls in with the construction and disposition of doors and chimney-pieces, we shall enter upon the particulars under those heads, in their proper place. We have here, in pursuance of the method laid down in our plan, given the general idea.

P A R T III.

Of the Ornamental PARTS of BUILDINGS.

The INTRODUCTION.

Of the FIVE ORDERS of COLUMNS, and their distinctions.

WE now enter upon a very important part of our subject; for the five orders, as they are the most elegant, are the only fixed and established article of the science. Many who affect to be thought judges of architecture, have never considered any more of the study; and as there have been a great number of books written solely upon them, so they generally take up the largest part of others, in which the numerous remaining articles are treated.

We shall endeavour here to give them all the consideration they demand, but not to expatiate either in criticism or ostentation beyond those limits. We write for the general service of those who build, and we are sensible very great and very elegant edifices may be raised without any use of these ornamental parts. 'Tis therefore we shall consider them less diffusely than is the usual custom: but at the same time as we are conscious that nothing can give so great an air of dignity and nobleness to a structure as their proper use; and that no person can be said to have a good knowledge of the science who is not very perfectly acquainted with their several parts, we shall allow them such a compass as may be requisite to communicate that information.

Too much of what has been written on this subject is ostentatious; we shall endeavour to be useful: and as there is a general complaint among the beginners in this science of the difficulty of understanding what is written concerning them, we shall labour to make it clear. As we shall enter upon this by comparing the remains of ancient buildings with what is written of these their most conspicuous parts, we shall hope to throw some new lights upon the subject.

What we mean by an order of architecture is an entire column, consisting of four parts, its *base, shaft, capital, and entablature*. We find in the remains of ancient buildings, and in the writings of early architects, distinctions of entire columns, which have all the general composition, between one another; these distinctions create what we call the different orders.

The distinctions which thus constitute the several orders in architecture are of two general kinds; some of them regard the proportions, and some the ornaments. The most visible and striking are those in the ornaments, but the most essential are those in the proportions.

Book II. We see, in this difference, the character of the superficial and the judicious architect: hear them speak severally on the subject, the one is always influenced by the ornament, the other by the proportion; a vulgar eye may know the *Doric* order by its triglyphs, and the *Ionic* by its volutes: but we see many familiar with these obvious characters, who never puzzled their minds about the true proportions.

Of what are comprehended under the name of orders, some are more antient, as the *Greek*, some more modern, as the *Roman*; some depend on judgment, as the five plain orders; others have owed their origin to fancy, as those lesser kinds, the *Caryatic* and *Persian*. There are also some things which they have in common; as the swelling and diminution of their columns: and some additions which are arbitrary in their use, but when they are employed are tyed down to certain rules, as the article of pedestals. Finally, although of themselves very beautiful, they are capable of being many ways enriched, and that often with great propriety.

These articles afford a kind of natural division for this part of our work, which will be the more clearly understood the more distinctly it is treated. We shall therefore, according to such general distribution, treat the present article under seven sections. The first will contain the doctrine of the orders in general, and of what they have in common; the second the three original orders of the *Greeks*; the third the two additional orders of the *Romans*; the fourth the fanciful or lesser orders; the fifth the additional parts to the several orders; and the sixth their decorations. To these we shall add a seventh on the construction and ornaments of pilasters. Under this disposition we apprehend all that relates to this part of the subject may be made familiar to the attentive reader.

S E C T I O N . I.

Of the ORDERS in general, and what they have in common.

C H A P. I.

Of the origin and number of the ORDERS.

ALL that has been determined concerning the orders, is established upon what remains of the works of early architects: for, as to authors, we have but one who can be called antient, that is *Vitruvius*; and the institution of the *Greek* orders was very long before his time. It is to these most antient remains that we are to look up for their origin; and it is not difficult to perceive, even in the earliest of these, a true beauty and noble simplicity from which many of the deviations, however intended for improvement, have been introduced.

The antient and original orders were no more than three. The *Greeks* invented first the *Doric*, whose character is strength and just proportion; afterwards the *Ionic*, lighter and more elegant; and lastly the *Corinthian*, most beautiful of all. The *Romans* added two to these, one at each extreme: they made the *Tuscan* plainer than the *Doric*, and the *Composite* more ornamented, if not more beautiful, than the *Corinthian*. These are the five, let it not surprize the student in this science that all the genius of mankind has not discovered a sixth: the two added to the *Greek* three, were not necessary.

The *French*, by fixing cocks heads and flower de luces upon the *Corinthian* capital, have attempted a new order idly; and the *Attick*, which consists of pilasters, and the *Persian*, in which slaves, and the *Caryatick*, wherein women, supply the place of columns, do not deserve that name.

Architects of various times have tried some innovations in this matter, by joining the parts of one order to another; but they have not succeeded. They call these composed orders; but they are, in the eye of reason and true taste, inferior to the simple. There was meaning and character in the invention of these: the best praise of the others is fancy; and they are generally to be charged with impropriety.

As this is altogether a matter of taste and genius, there is however no reason to say another order should not be invented. It is indeed not wanted in the regularity of buildings, but it would give variety. It is not out of the compass of imagination, and it is worthy attempting; but he who shall set about it must first be a perfect master of the design of every part and proportion of the others, and then while he imitates the plan upon which those went who formed them, let him avoid their ornaments and proportions. If any

Book II.

thing is proposed new on this head, let it be new absolutely; and he who shall so happily follow the steps of the old *Greeks* will deserve to share their reputation. At present we have seen no attempt of this kind from real invention, and all others must be poor: but some true architect, inspired with the full spirit of the science, may rise and strike out to us a beauty the antients never found; for it is in the compass of nature not yet exhausted.

We have said this is not to be attempted in the manner of the *French* variation of the *Corinthian*, nor in the general and frivolous fashion of devising composed orders: but we may go yet farther, it is not to be undertaken upon that plan of the *Roman* additions to the *Greek* three, for even they do not amount to what deserves the name of an invented order.

Properly speaking, we have yet only those three old orders of architecture: they shew invention and particular character, but it is not so with others. The *Doric*, *Ionic*, and *Corinthian*, differ from one another in essential things; the others have nothing but what is borrowed, and differ only in an accidental manner. The *Tuscan* is the *Doric* very gross and plain, and indeed is little different from that order in its earliest state: the *Composite* is the *Corinthian* enriched, or perhaps it may be as just to say loaded, with the *Ionic*. It is the *Greeks* to whom we owe all that is great, judicious and distinct in this matter: the *Romans* succeeded a little better than *De L'Orme*, who in vain endeavoured to follow their steps in another addition to the number.

To make a great architect there is required from nature as great and as true a genius as to make a consummate poet; and, in the same manner, what is given by nature must be subjected and confined by rules; the greatest attempt it could make would be the inventing a new order, and we have shewn upon what principles that is alone to be done.

C H A P. II.

Of the proportions of the ORDER.

AS it was from the works of the antient architects that the several orders were deduced, those who had studied and found their different characters, then became desirous of establishing from the same source their proportions. From the beauties and excellencies they saw in these remains, they took up an almost enthusiastick veneration for the architects who invented them, and from this they fell into an implicit admiration of them which led them into mistakes. Perceiving consummate beauty in what they saw, they sought to build upon that perfection, certain fixed and invariable rules, by the observing of which others might be sure of attaining the same excellence. At first this appeared easy, but when they came to examine more of those works they found the antients themselves had not confined themselves to any such laws; and therefore that it was impossible to build such rules upon their works.

As they became perplexed in studying a variety of antient remains, the young student is confuted by reading a variety of authors on the subject. Among a number of the best of these each delivers what he esteems to be the most true and perfect proportion, but in each this differs. All have founded their maxims upon something in the antique, but some having taken in the same order one piece, and some another, those proportions vary extremely; for the antients so varied in their works.

We shall endeavour, in an account of the orders, to set this matter in a more equal light. *Palladio* is understood to be the best and greatest of these authors, we shall therefore deliver his as the general and received authentic proportion in each order; but, upon a general review of the several remains in which that order is preserved, we shall add what is the mean or middle proportion of the several parts, calculating from them all.

The modern architects too strictly and scrupulously follow these antients; they did not so closely or servilely copy one another. They were conscious that beauty in any order was not restrained to an exact proportion of parts: hence they indulged their genius in its regulated flights, and from that liberty produced those several great works in the same order, which are all beautiful, though extremely different one from another. We who tie ourselves down to a severe observance of some one proportion, are but copyists at best; while they, though they preserved the character of the order one after another, yet were each an original. We seem to imagine that but one proportion of features can constitute a beautiful face: they, following where nature led the way, have shewn us that very differently proportioned features can constitute beauty, provided a proper harmony be preserved among them.

This may give us an idea of the difference between antient and modern architects: they restrained genius by rules; we propose working by rules in the place of genius: they were in every thing originals, we seem to establish it as a principle, that it is not needful to invent in order to deserve praise.

The

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The state of the case is this: as there is in the features of the face a certain degree of proportion within which all that is beautiful is confined, although that degree is not too strictly limited, so in architecture, so far as the orders are concerned, there is a certain proportion from which if we vary much we lose all elegance; but there are yet certain limits within which the genius may display itself in variations. The antients knew what these limits were; and we do not. We imagine, because columns of a certain proportion are fine, we must in the same order observe exactly the same: or, that because *Palladio* has allotted such measures we are not to transgress them: this is acting as copyists. The antients, though they saw one proportion beautiful in an order, conceived others might be so as well: thus they became originals, and the remains of their works shew they were right. It was from this genius, and on this principle, they ventured to augment or diminish the dimensions of the parts in the same order, and executed works so extraordinary in their proportions, and yet all fine. We compare them with the rules of the most established and authentick writers, and while we find them very different yet we allow them to be beautiful.

The *Doric* and *Ionic* cornices, in the theatre of *Marcellus*, are half as large again as they ought to be, according to the rules of *Vitruvius*; and yet we see they are perfectly beautiful. Would not a cornice in either of these orders, made according to the exact rules of that author, be as beautiful? We know it would; for we see such and admire them: therefore we find there is great liberty, and why do we not take it? Let us be as bold as the antients, but first let us be as judicious. Let us understand how far we may vary, and then not fear to do it. Whether we search in the books of the approved writers, or in the admired works of the antient builders, we find authority for this liberty, no two architects, nor any two authors, agreeing in the same rules.

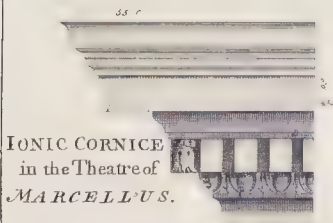
We see by this that both precept and authority, taken in their general sense, admit of certain variations; and it is in the spirit of undertaking these, and the judgment of conducting such an undertaking, that the genius of an architect is to display itself.

We admire the antique works, and that with reason, but let us not limit our admiration to any one instance, but take in the whole: in the same manner, we esteem the authors who have studied and allowed their proportions, but let us there also take in all. They have built their rules upon different pieces of antient remains, and all those fragments are fine, though they differ so much. Let us see this matter in a new light: let us understand these as instances of the great variation from any one antient work, or any one given rule, that is yet consistent with beauty.

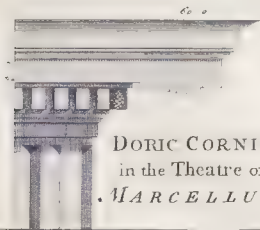
Upon a close examination of these we shall distinguish which are the most excellent, and which are least; and this is the principle on which genius is to form itself. If the architect shall dare to attempt the invention of a new order, it is the greatest work within the compass of his science: if he shall chuse to attempt variation from what is the constant track of his cotemporaries, let it not be by forming a new composed order, but by varying the dimensions of parts, as we have shewn him the antients did vary them; and by keeping so strictly within their limits that all he does shall be sure to be beautiful.

VARIATIONS in the DORIC and IONIC CORNICES.

Pl. 37



IONIC CORNICE
in the Theatre of
MARCELLUS.



DORIC CORNICE
in the Theatre of
MARCELLUS.



IONIC CORNICE
VITRUVIUS.



DORIC CORNICE
VITRUVIUS.

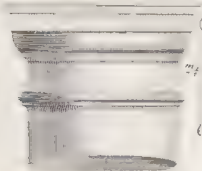
VARIATIONS in the DORIC CAPITAL.

DE L'ORME.

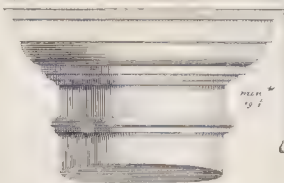


In the Colliſæum.

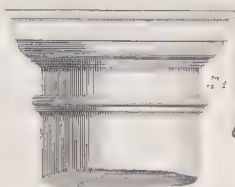
According to ALBERTI.



In the Theatre of *MARCELLUS.*



According to PALLADIO.



A Scale of Sixty Minutes or
one Module

T. Craig sculp.



In the distribution of the orders in buildings one inviolable law is to be observed, Chap. 3. that is, that the strongest be always set lowermost, as most capable of bearing the weight. The *Doric* is to be under the *Ionic*, the *Ionic* under the *Corinthian*, and the *Corinthian* is placed under the *Composite*, though there may be some dispute on this head. There are those who make the height of the *Composite* equal, and some who make it less than that of the *Corinthian*; and its capital is heavier. As to the *Tuscan* that is always to be placed lowest. If there be but two orders in a building it is not necessary that they be two exactly following one another, but the *Corinthian* may be set over the *Doric*: all that is to be observed inviolably is, that the heaviest be lowest.

Thus the distribution and use of the orders is settled in a few words, but the doctrine of their proportions may carry us a little farther; we shall trace it from its original in a succeeding chapter.

C H A P. III.

Of the origin of proportions in the ORDERS, and the antients' observation of them.

WE prescribe the measures of the parts in those columns which remain from the hands of the antient masters, as laws and rules to succeeding architects: but what do we suppose was the law or rule to them? it was no more than fancy; but it was a fancy under the restraint and conduct of judgment.

The proportions we have shewn varied greatly in their several works: we may now add they were arbitrary. They pleased when they were executed, and they became examples; because, being in themselves good, and custom having approved them, it was proper to follow in the same road. Criticks have established rules of poetry upon the practice of the antient poets, but in those poets the flights and beauties were the result of fancy thus confined and limited by judgment. The origin of the rules of architecture, so far as the orders are concerned, has been just the same: men have found beauties in antient works, and upon those beauties they have founded rules; but they had none who made them.

The architects who followed one another we see varied, but with discretion; they considered an entire column as they would have done an entire beautiful face. They knew that although a double length of forehead was inconsistent with beauty, yet that a twentieth part taken away from, or a twentieth added to what was handsome, would make another face handsome also; though not exactly in the same manner: and they followed the same rule in their orders: they saw the variety nature gives in the beauty of faces, and they transferred it to the beauty of columns; they made them often differ but always please.

Book II. If we enquire with the greatest nicety what could be their reason for certain exact proportions, we cannot find it: for there appears nothing in nature that could be a reason: we have therefore great cause to suppose there was not any. Those who enthusiastically admire antiquity, declare these proportions to be incomprehensible, and admire them not only although they will not, but because they cannot, understand them: this may be the way to reverence the antique; but it is not the path by which it can be imitated. It is more rational to conclude that those things in particular works, for which we can discover no reason, were not founded upon any, but were the result of fancy. The poets took these liberties, and the architects of antiquity were as great geniuses as the poets: they also took them. The preciseness of these measures was not of importance, and therefore they boldly varied them.

Our spirit of submission is too great. To be like the antients in our works, we should be, like them, in our imagination free, but limited within certain bounds by judgment. We have mentioned great variations from rule in the cornice of the *Doric* order: we may, now we have thus introduced the freedom, produce a greater instance in the projecture of its capital, in which authors and the old architects have been equally negligent. *Alcibiades* allows this projecture seven minutes and a half, and *De L'Orme* fourteen minutes: here is a great difference in the measure between two great authors; and the rest have varied also, though by less degrees. In the theatre of *Marcellus* it has thirteen minutes and three quarters; in the *Coliseum* it has nineteen and a half. Here is a greater difference; but let us compare the difference between nineteen and a half and seven and a half, and we see a latitude that appears almost as if there were no limits at all.

When we can see how any thing in architecture is deduced from nature, there is a rule for judging of its propriety by referring to that standard. Thus the diminution of columns being an imitation of that natural contraction in size which is seen in the trunks of trees that were the old columns, this is a rule for judging of it. Accordingly we see that architects never depart much from the proportion established by nature, and if they should we should censure them accordingly: but we have no rule of judging concerning the proportion of the parts of an ornament, for they are not founded on any thing in nature: they were originally the effect of fancy, and custom alone has taught us to limit them so narrowly.

Having thus far explained the nature and origin of the proportions observed in the several orders, we shall be understood, and we hope pass uncensured in the method we are about to use in treating of them.

There is a great variety in them, and yet there is beauty throughout; for the most excessive works of the antients in this respect are not without grace; nor the most extravagant rules of authors without some pretence to elegance and harmony.

An architect of genius will be glad to see this field before him: he will think himself happy in designing a building that is to be enriched with the *Doric* order, that he has all the latitude between two and a half and seventeen for the projecture of its capital; that he can proportion this projecture to the general idea of his building any where between these extremes, and shew his authority. This is an happiness to the person of real

genius;

genius; and were there only such, one would wish no system of rules had been laid down for any particular proportions; but that all to be found in books was a display of this vast variety before him in antique instances, that he might take his choice among them, or make any variation between them. But as all architects are not, nor can be expected to be of this stamp, it is needful some standard should be established, founded upon what a good taste shall most admire in the antique, and fixed as a model from which to work, or as a test to which we may have recourse in disputes and controversies.

This is what all the eminent moderns have attempted: we shall not perplex the reader with recounting what they have severally determined, but as *Palladio* has executed the task best of them all, we shall deliver for the service of the ordinary architect his proportions: for the use of him who has judgment and imagination, we shall on each head mention the greatest variations that the antients have taken, so far as appears by what remains of their works, and hence establish, as we have said, a mean or middle proportion between them. We shall not propose this in opposition to *Palladio's* rules, but deliver it for the architect of genius to study and to compare with them. It is mean in the undertaker of a great work to copy strictly, and it is dangerous to give a loose to fancy without a perfect knowledge how far a variation may be justified. We have given the model, and shewn the limits; and we hope in this manner of explaining the subject we have neither cramped the genius of the greater, or perplexed the imagination of the humbler architect.

C H A P. IV.

Of the general form of COLUMNS.

A First and universal rule in the construction of columns is, that they must be round. To guide our judgments properly, let us on all heads where it can be done, refer to nature, and to the origin of those things which were the first imitations of nature. The original columns which were used in the first buildings, were the trunks of trees: these are round; and therefore as columns of stone are only imitations of these originals, they must also be round. Nature has formed the trunk of no tree square, therefore there could be originally no such thing as a square pillar; the stalks of some tender plants are square, but it was not from these the model of columns was taken, for they want solidity.

Roundness therefore is the first article in the general form of a column, and it has been observed by the antients strictly; they had their reasons for occasionally using pilastrs, of which we shall speak hereafter: but in the shape of their columns they never varied. Perhaps it is an error in those who suppose the *columna Atticurgae* was squared; if it were so in reality, it was an idle invention, and has been treated as it deserved.

As the form of a column should be round, from the institution of its natural original, so it should also be plain and even on the surface; for the trunk of a tree has no unevenness, unless what may arise from knots; which would naturally be levelled before it was employed for this purpose.

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We are here entering upon a subject whereon we must contradict vulgar architecture in many instances, but it is with reason, and upon the practice of those ancient workmen whose remains even vulgar architects affect to admire.

In the first place let it be considered that there is a nobleness in simplicity which is always broke in upon by ornament : therefore no ornament should be admitted but what is reasonable ; and nothing is reasonable in architecture which is not founded on some principle of use.

Let this be the law according to which we try the common methods of decorating columns. In their origin they were plain and equal on the surface, and we still admire the beauty of such as are exactly proportioned on the same plan.

The first ornament that was given to the shafts of columns was the fluting ; and even this is not strictly to be authorised. We see it in some very early works ; but reason, where a principle of judging is once established, is superior to the authority of any example, and we may try even these admired antients at her tribunal : we see flutings of columns very early introduced, but it is to be condemned as an early error.

It is allowed columns should not be squared, because the trunks of trees which are their model are not square ; if this be reason, and so it is allowed to be in this instance, it is also in the other. Is there in nature any trunk of a tree fluted ? Certainly there is not ! therefore the practice is false. If the antients meant in this to imitate those cracks and chops there are in the barks of old trees, they were for imitating an imperfection. There are trees that have smooth and entire barks, therefore there was a reason in nature for plainness ; and if they would imitate the cracks of the others, flutings are too regular to represent them.

We see flutings of columns have no origin in nature ; let us next examine them in the eye of reason. What is the use of a column ? Strength. Will its strength be encreased by flutings ? No : for so far as that has any effect it will be diminished ; but they are so slight that it is to be allowed this is not much. Their best use is in inside works, where the strength may be spared, and it gives a lightness to the eye.

There is but one reason that can be alledged in their favour ; that is, they have an air of lightness : but if the column be proportioned rightly, its own aspect is just as light as it should be. It were an odd humour to make it originally too heavy, in order to scoop away some of its surface to make it lighter.

These flutings have the best appearance when they are cabled, that is filled up ; at least to a certain height : but if they were to be filled up, to what purpose were they made ? They impair the great simplicity of the column, and they have no foundation in reason : therefore they are a false ornament.

This is judging with severity, but it is judging with truth.

Our architects do not see this ; but they have found it in *France* : there is not a fluted column of any order to be found in their latest and most correct works.

As we have censured the fluting of columns, we shall need to say little in our justification, for utterly condemning all those other ornaments with which they have

confounded and loaded their shafts by way of decoration. These ornaments, as they are more unnatural, are more perfectly condemned upon the same principle. Chap. 4.

Vitruvius declares against all wreathed and twisted columns; and utterly disapproves the practice of adorning them with foliage and figures. We see designs given for such absurd decorations in some of the modern books of architecture, and we have professors of the science as bad as our writers upon it can be, for they are practised; but they are altogether without excuse.

In the last place we are to mention those delights of little architects called rustick columns, in which rough joints or square stones project at little intervals above the rest of the surface. The reader will perhaps tell us, that the *French*, whom we have just praised for banishing fluted columns, authorise these. It is true the palace of the *Tuilleries* is full of them, but though *De L'Orme* who put them there went a great way toward restoring truth in architecture, these columns are an instance that some of the false taste of those ages he condemned remained with him.

We have observed what was the origin of *Rustick* among the ancients: they smoothed the parts of stones that were to be joined together before the surfaces that were to appear; considering strength before beauty. They usually polished these surfaces afterwards; but in great buildings they sometimes omitted this finishing. When they did, it was not because they thought it a beauty, but to save vast expence.

A column in part *rustick* and in part polished is an absurdity; it seems composed of joints and those of unequal strength: but all the strength by which the strongest parts exceed the weakest must be useless. Those which have great square stones standing out are in the excess of absurdity; they have a look of solidity; but the use of solidity is strength: they cannot give strength to the column, because the parts between have but their own solidity; therefore they are useless, and they confound the idea of proportion.

The workmanship of the twisted columns has recommended them to some, but it is an ill taste to think any thing fine merely because it was laboured and difficult. Ornaments out of place are no ornaments at all; plainness is always preferable.

Many great and excellent designs of the moderns are disgraced by these idle ornaments, but the taste for them is greater in other parts of *Europe* than in *England*. In this and in all the other enquiries of the same nature, we shall find that all these ostentatious errors charm the vulgar, but disgust the judicious: the simple and the natural is the proper path to beauty.

A COMPLETE BODY

C H A P. V.

Of the position of COLUMNS.

IT will be seen that we set out as strict and critical judges of what is done in architecture; for by that we shall determine what ought to be done; pointing out the beauties for imitation, and the faults as objects to be shun'd. Though strict, we do not intend to be more severe than justice demands; and as reason, under the guidance of rules, is the sole proper judge in these things, we shall venture to arraign even the practice of some of the antient architects, where fancy has taken the place of judgment in their constructions. Of this we are about to give an instance, and such a one as will shew the reasonableness of the practice.

We have considered the form of columns, we now are to judge of their position. The intent of columns is to support the weight of a superstructure; we have seen in the doctrine of walls that all supports have their full strength when they stand at right angles; it is therefore the perpendicular position of a wall is its proper posture, and for the same reason this is the only position for columns.

It is then a law established by reason that all columns stand exactly perpendicular; but this direction of reason is not without violation, even in the admired works of antiquity.

We see instances in the porches of their temples of columns which were not placed perpendicularly, but stood inclining toward the wall. There are those who so enthusiastically admire the antients that they think even this to be just and fine: but we see the law of the other position established in reason, and that so strongly that it is superior to all authority. Such an inclining posture of a column is unnatural and injudicious, altho' the antients have given it; and it must give distaste to the judicious, though found in their finest works. Being found in company with great beauties, it may have for that cause escaped the censure it deserves, but it is not the less faulty because overlooked. The young architect who should suppose every thing must be right in the antient remains, because he found it there, might be ready to copy whatever he found there: we have proposed this as a striking instance that he would in that do wrong. Let him admire them, but let it be upon a foundation of good sense; and let him be impartial enough, while he reverences their excellencies, to see their faults.

As the column must always appear ill when the least out of a perfect perpendicular, so it will always appear most beautiful when free and detached entirely from any wall. A column never is seen in its full beauty but when it is free of all connection and incumbrance in the shaft. There are occasions on which columns must be in part immerged, and in these we must submit to the necessity; but we are to remember that as the thing is in itself a defect, the greater the degree the more is the defect, and therefore we should bury them as little as we can. A fourth part of their diameter is the most that can be allowed to be hid, and when it is less it is better; for the more a

column

column has its natural free air, the better it will always appear. The engaging columns in a wall is always to their disadvantage: an architect should therefore take all possible pains to avoid it; but we see there are those who from their using it by chance seem to think it a beauty. Chap. 5.

There is in *France* an instance of a depravity of taste still worse than this; it is in the inner court of the *Louvre*. Columns are there engaged not in a wall, but in one another: this surpasses all that we can shew in *England* in absurdity.

The beauty of the position of a column consists in three things; we have named two of them, which are, that it should be perpendicular, and should be free; the third is that it should stand upon the pavement. This rule strikes at the doctrine of pedestals; and it is with some remission and exception that we establish it. In general columns are best without pedestals; but in some instances pedestals are proper.

We see in the works of the antients where they remain unburied at the bottom, some ranges of columns with, and some without pedestals; but the best are always those that are without them. In very antient buildings we find there was not so much as a base; the temple of *Minerva* at *Albens* is an instance, where the old *Doric* rests upon the pavement without so much as a plinth. Solidity is a great merit in columns, and so is an appearance of solidity; this appearance is best preserved when they stand without pedestals. There is always an apparent danger of their being shuffled off from the pedestal, and there wants that simplicity and composure which is in the column alone.

The original use of pedestals was apparently from necessity, not choice; the antients had columns that were too short for the buildings, and they found this way of giving them length. We see double pedestals used for the same purpose one upon another, and they give a miserably tottering aspect.

There are occasions on which it will be needful and graceful to raise the series of columns; as from a variation in the level of a pavement between a portico and the body of the building; but then this is best done by a continued wall: in other cases a little separate base may be conveniently given to every column; as when the spaces between the columns are filled up by a supported balustrade: but even this is enforced by necessity not choice; and the use of pedestals is yet more unnatural. The architect may support the use of pedestals upon the authority both of great writers and great edifices, but they are unnatural and have no foundation in reason: though *Vitruvius* countenances them, and they are found in elegant works, they are wrong. They are plainly a shift to help out the length of columns. One asks naturally why the columns were not made long enough without them? and the question is unanswerable.

THE original columns were as we have said the trunks of trees, and those of stone or of timber, fashioned by the workmen's tools, which afterwards supply their place with more elegance, still kept to the old form. Trunks of trees could not be any where got all the way of a bigness, therefore the original columns were smaller at top than at the bottom: this was taken into the form of stone and other wrought columns, and is what we call their diminution.

All columns are diminished, but the degree of that diminution is the least settled of any thing in architecture. *Palladio* is short upon the subject, following *Vitruvius*: he says the taller they are the less they must diminish, because the height answers the purpose of diminution to the eye. He lays it down that if the column be fifteen feet high its diameter toward the base should be a sixth greater than toward the capital; in a column from fifteen to twenty feet high, he allots the diminution to be one seventh, and in one of twenty or thirty feet or more, an eighth.

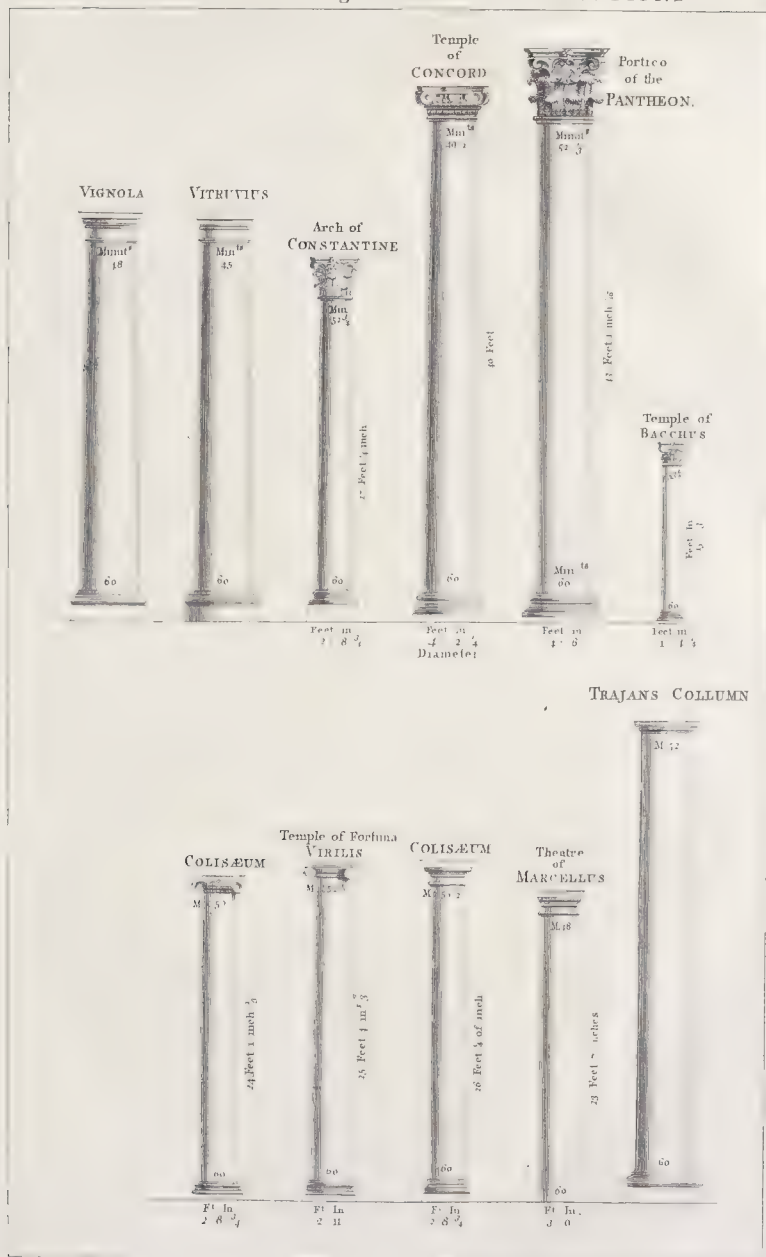
This is the rule delivered by *Palladio*, and taken from *Vitruvius*, who prescribes that the diminution be not according to the proportional but the absolute height of the column; not according to the number of diameters, but the measure in feet: a column of fifty feet high he would have diminished but an eighth part.

The architect who will content himself to follow the directions of a master may observe these proportions, and his work is easy: if any one blame him he has the authority of *Palladio*, nay to the learned he may cite *Vitruvius*. We shall always make it our business first to deliver the settled and established rules of the science to these, but we shall remember there are also another set of readers. To such we shall observe that although they may be safe from censure in the observance of these rules, there is no necessity that they should be ty'd down to them; for they were not strictly observed by those architects whose works are the foundation of all that is just, great, or elegant in the science.

Vitruvius and *Palladio* say the diminution of columns should be according to their absolute height; let us see whether the practice of the antient architects implies a necessity of this. The columns in the temple of *Bacchus* are about a fourth part of the height of those in the portico of the *Pantheon*; but the diminution is the same in both. Are not both elegant? Certainly they are! Then there may be elegance in a diminution very different from that prescribed by *Palladio*: and he who should think it proper to follow so different a design has the sanction of the antique, at least equal to the authority of *Palladio*. We would have the architect give liberty to his genius, and at the same time know where it is bounded. The single proportions described by *Palladio* are too narrow and too strict a confinement. They are useful in the highest degree to the common architect, and therefore we shall on every occasion deliver them; and as they are the

COLUMNS Shewing their several DIMINUTIONS.

Pl. 18



R. Baring Sculp



the best that have been established, we shall deliver them only: but to enlarge the view for the bolder spirit, we shall on each occasion deliver also the practice of the antients in its extent. Chap. 6.

There are three manners of diminishing a column. 1. The beginning from the bottom, and diminishing all the way up. 2. The beginning from a third part of the height; and 3. The making the column thick in the middle, and diminishing it to both ends; this last is what we express by the swelling of a column, and shall be considered separately in the next chapter. The other two are the simple diminutions; *Philander* rightly says the second was the most antient and most graceful manner, but the other which commences from the base is the most natural.

The article of diminution seems to have been an established custom among the antients, but the practice of it, as to the manner, very arbitrary. The columns of the temple of Concord are very large, and they have more diminution than such as are less by half; we have an instance of this in those of the arch of *Constantine*.

Vitruvius's rule, however adopted, is also proved to be different from the practice of these great masters, in many other instances. Many columns that are less than fifteen feet have less than a sixth part diminution; and many which are above fifty feet have a greater diminution than he allots them. The degree of diminution is not proportioned to or influenced by the difference of orders: we see examples of smaller and of greater diminutions in all the orders in the antient works.

There is only one order in which the diminution is directed to be proportioned that way; this is the *Tuscan*. *Vitruvius*, who has directed the others to be diminished according to their absolute heights, orders this to be contracted in diameter in proportion to its thickness. The diminution he directs is a fourth part; this is so violent that it has shock'd architects: *Vignola* orders it to be only a fifth; and most of the modern workmen make it less than that.

We have but one instance in antiquity to which to refer in this variety of sentiments; but it is fit the architect should be told of that. The only *Tuscan* work remaining of the antients, is the column of *Trajan*, and in this the diminution is but a ninth part.

It is plain, from a critical examination of the antique remains, that those architects who are our proper masters, and their works our models, did not make the diminutions of their columns different according to the different orders, nor according to the sizes of their columns, there being different diminutions in the same order, and in columns of the same size; as there are like diminutions in the different orders, and in columns of very different bigness.

We shall advance nothing here but what we support by instances: the *Doric* column of the theatre of *Marcellus*, and that of the *Coliseum* are very nearly of the same size, but they have different diminutions; and the difference is not less than between twelve and four: the *Ionic* column of the temple of *Fortuna virilis*, and that of

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the *Coliseum*, which are also nearly of the same bigness, have their diminutions different as from seven to ten. On the contrary, there is the same diminution in the column of the *Fortuna virilis* and that of the porch of *Septimius*, though one is of the *Ionic* order, and is only two and twenty feet high; and the other is *Corinthian*, and thirty seven.

We infer from this that the antients were our masters, but no instance of their practice is to be our universal guide; and that the rules established by *Vitruvius*, though adopted by *Palladio*, are more strict than they need to be. We have shewn that the diminutions in columns were not influenced by their absolute height, or by the proportions of their order; we cannot conceive by what they were dictated: and it is reasonable to believe they were prescribed by no law at all. The antients were not ty'd down to rule in many things wherein we thought they were, but worked by fancy. Perhaps they had in their eye in this respect the construction of the whole fabrick to which the column belonged; and diminished it accordingly. Certain it is that we see extremely different instances of this diminution in their works, and yet all look well: let us keep these variations in our eye, and endeavour to imitate their practice, who indulged the flights of genius with discretion.

As we have given the rules of *Palladio* for the diminution of columns, we shall here, as we propose in other instances, deliver that proportion which results as a medium from the general observation of the practice of the antients. We shall give this first with respect to the *Tuscan* column, which *Vitruvius* has treated separately; and then for the others. In the settling the mean diminution of this column, we shall have some regard to a continued practice, though reason be against it. Instead of two fifteenths, which will be found the mean diminution in the others, we shall allow this as a mean a sixth part.

In reason, if we were to alter the degree of diminution according to the orders, it should be less in those which are shortest, because in these it is most apparent; but custom is too powerful in this instance on the other side.

The *Doric* column before alluded to, in the theatre of *Marcellus*, is twenty one feet in height and three feet in diameter; the diminution of this is twelve minutes. That in the *Coliseum* is twenty two feet ten inches and a half high, two feet eight inches and a quarter thick; and its diminution is only four minutes and a half: the medium of these two numbers is eight minutes and a quarter. The *Corinthian* column in the basilick of *Antonine* is thirty seven feet high, four feet five inches and a half thick, and its diminution is six minutes and one eighth; and the *Ionic* in the temple of Concord, which is six and thirty feet high, and four feet two inches and a half thick, has a diminution of ten minutes and a half. According to these measures, which are the greatest and the least in the *Doric* and the other orders, and between which there are diminutions in all the intermediate proportions, we shall find that the mean diminution, according to these, produced by adding the largest to the least, and taking half that number, is about eight minutes and a quarter.

Thus the architect has a new rule for the diminution of columns, which is founded on the practice of the antients, taking the middle way between those extremes which

we see in the remains of their works. This is, that in the *Tuscan* column he make the diminution a sixth part of the diameter of the column at the base, and that of all the other orders about an eighth and a quarter. Chap. 7.

He sees that he may be authorised in carrying the diminution of the *Tuscan* to a fourth, by the rule of *Vitruvius*; and that of the *Doric* to twelve minutes, by the *Doric* of the theatre of *Marcellus*: but the best method is to keep within these extremes. Let him know what are the rules established by the most authentick writers, and what is the extent taken in variation by the antients, and what is the mean of that compass either way. Having these assistances before him, let him consider his column with the building to which it is to belong, and determine as these architects did, what was best and most noble, not in general, but in the present instance.

C H A P. VII.

Of the swelling of COLUMNS.

WE have seen that the diminution of columns is a thing proper, natural, and graceful, and that it has been practis'd by the antients universally, though in different proportions: we are now to treat of an alteration in their diameters of another kind, which is called their swelling. The diminution of columns is made from the lowest, or some lower part, to the top; the swelling is made about their middle, and renders them smaller at either end. This, though almost universally practised and prescribed by the present race of architects, is neither proper, natural, nor graceful; and there is no authority for it in all the remains of the ancient architects.

It will seem to some rash in us to censure so freely a practice so generally received and approved; but the present custom among architects is no sanction for any thing. This is one of the abuses crept into architecture, and ought to be abolished utterly: the *Gothick* columns of twenty diameters in height, and without diminution are not more false in their principle.

Let us reduce this to the general test, nature and antiquity: nature abhors it, for she forms no such figures, unless diseased ones; and antiquity is pure from any instance of it. It is true that *Vitruvius* talks of giving rules for it; but it is also true that he has not given any: and we see that his almost enthusiastick admirer Sir *Henry Wotton* condemns it. *Palladio* makes it universal to all the orders, and puts it upon an equal footing with the diminution, naming them in the same sentence. He even gives rules for the doing of it according to his own practice; in this probably he was led from his better judgment by the veneration he had for *Vitruvius*, and thought it a virtue to supply what it was a merit in that author to have left a defect.

Columns are representations of trunks of trees: let us keep this in our eye, for this is reducing all to the standard of nature. Is there any tree whose trunk swells
in

Book II. in the middle? There is not. This is as certain as that there is not one but what does diminish.

So far from beauty it offends every eye, and most of all the most judicious. It is prudent in architects to make it as little as they can; for in all faults the less the degree the better.

The method by which *Palladio* executed this swelling was this: dividing the shaft of the column into three parts, he drew the lower third perpendicular. At the extremity of this he laid a thin bending rule of the length of the column, or a little more: and bending that part of the rule till the end touched at the point of the diminution under the astragal, he followed the bent of the rule, and so the column became somewhat swelled in the middle, and diminished properly toward the top. This was his way, and we find it approved and followed: it is a short, easy, and practical method of forming the swelling; but there is no authority in nature, reason, or the practice of the old architects, for making any swelling at all: on the contrary, all these, and every other consideration, are against it.

Vignola and *Blondel* have also laid down methods of forming the swelling, and different others may be contrived, but idly. The practice seems to have had its origin from this: that in columns of a moderate height the middle being nearer the eye than either end, would appear therefore a little thicker, the diameters at the ends being diminished by distance: but this could be so little only as not to be worth regarding; nor could any thing be so needless or false as to add to it. When the swelling is visible, it conveys no other idea than that of the column over-pressed, and bursting under its weight: an idea of ruin: the last that a judicious architect could wish to convey in any building.

C H A P. VIII.

Of the variations in the heights of COLUMNS.

IN laying down rules for the several orders, on which we shall enter after we have thus discussed such things as concern all equally, we shall deliver their different proportions of length to thickness, on which the distinction of the orders more depends than on their ornaments or any other particular. It should seem therefore that their proportional lengths ought to be the most fixed and settled things in all the science; but we find the ancients, who indulged their genius in variation from whatever could be called a rule on any other head, were not perfectly limited even in this material point.

It has perplexed all who have followed them to form a guess why they took so strange a liberty; but we shall presume to offer our opinion.

Though they took this freedom in the height of their columns they did not follow it at random; but, as will be seen presently, in a particular manner and on particular occasions. We have observed, in order to account for their different degrees of diminution, which were neither proportioned to the height of the column nor to the order, that probably it was adapted to the harmony of the entire building: and very probably the case was the same in respect of this diversity of height in their columns.

There is an absolute, and there is a relative, proportion: perhaps these architects, who were indeed persons of an exalted genius, comprehended in one general view the whole building and all its parts; and, having a true idea of both kinds of proportion, fitted the parts to the whole in a manner quite unknown to us, and as much above our comprehension as their works are above our imitation. Something of this greatness and extent of genius there is required for the erecting a magnificent building: they shew they had it; and we appear to want it.

Whatever was the reason, for this is but conjecture, the practice was followed: that is a certainty. They perfectly well knew the just and general proportion of each order; they were too accurate to vary from it through carelessness, but we find they often have departed from it: therefore they doubtless did it with design, and intended these differences in the heights of columns of the same order proportioned to their thickness.

If we consult *Vitruvius*, he makes the *Doric* columns of temples shorter than those of the porches behind theatres, and the reason he gives for it is, that they ought to have more solemnity in temples than in other places.

It is plain then *Vitruvius* did allow the *Doric* column a greater length in proportion to its thickness in some uses than in others: this establishes the fact of an allowed variation, and he was undoubtedly right, that there is more solemnity in a lower and more massy, as there is more elegance in a lighter and higher column.

Book II.

This corresponds with the opinion we have proposed as to the reason of the antients allowing a variety in this important article; for we see they took in the idea of the whole fabrick, and even of its intended use, into the consideration of reducing the proportional height of the column.

Palladio has given in the *Dorick* a greater height to columns which stand on pedestals than to those which have none; and this with a reason equally apparent and just. He raised the column to an height beyond what was natural to it, by setting it on a pedestal; and to soften this elevation he also added proportional height; that is, he took away from the proportional thickness of the column. In this he also followed the effect of the eye, as the antients did in some degree in all things. As this raising the column upon the pedestal a little diminished its thickness by distance, they added to the natural variation by diminishing the diameter yet more.

Serlio orders the column to be a great deal shorter when it stands detached, than when it is fixed to, or in part immerfed in, a wall; and he gives as a reason, that it then requires to be stronger. But this is an unwarrantable variation from truth.

Vitruvius has an absolute, substantial, and noble reason for reducing the height of the *Doric* column in temples; and *Palladio* has at least an excuse for reducing the thickness when he sets his columns in that order upon pedestals; but *Serlio's* is altogether imaginary, when he would have them a great deal massier, because they stand detached: he is right in saying that a detached column is weaker; but when we have so plain a remedy for this as the placing them nearer together, there is no cause why we should so idly vary the proportions, and that in so extravagant a manner as he proposes.

We see the antients have taken great liberties, but with reason. Those among the moderns who have thought of imitating them, have been unhappy in a double respect; they have gone into excess, and they have done it either on a false principle or on none.

We have said before, and we shall say repeatedly, in the course of this work, that to be a great architect requires a very great genius.

From this variation in the proportional height of columns, authors have established their laws for different heights, allowing them a similar proportion in the several orders compared each with the other. This makes what is called the progression of columns. Having given the foundation of the variations in this place, we shall proceed to this comparative proportion in the several orders, according to their progression, in the succeeding chapter.

C H A P. IX.

Of the progression of heights of COLUMNS.

IN those succeeding chapters wherein we treat separately of the several orders, we shall deliver their heights, in proportion to their diameters, according to the rules laid down by *Palladio*, and according to the antique; giving the absolute proportion from that author, and the mean proportion from those remains. We are here to consider the heights together, which will there be treated separately, and to observe the progression in increase from one order to the other.

They have a like proportion each respectively to the others, by which they rise in height as the orders are less massy. This augmentation should be a very settled thing, but it is greater in some than others. We shall here trace it to the origin; and we hope to explain it thoroughly, and to establish this part of architecture upon a certain foundation.

In the oldest remain, the progression of increase in heights is but of five semidiameters in the five orders. The *Tuscan*, which is the shortest column, has seven diameters and a half in height; and the tallest, which is the *Composite*, has ten. Here are therefore, between seven and a half and ten, two diameters and a half, or five semidiameters.

Vitruvius makes the progression of increase the same in quantity as we find it in the oldest works, that is two diameters and a half; but he raises them not from seven and a half to ten, but from seven to nine and a half, making the *Tuscan* column only seven diameters high, and the *Composite* nine and a half.

In *Scamozzi* this progression of increase is five semidiameters and a half; and in *Palladio* it is six semidiameters. We have here named this author last, because he is the most authentic with the common race of builders; but we have shewn what is determined by the antique, and by his master. *Vitruvius* has not departed from the models of antiquity; and it will be better that succeeding architects adhere to them. There is a justness in this progression of a semidiameter, in each order, that may easily be overlooked, but that ought to be well regarded.

According to our custom on other heads, we shall compare the greatest and least of these progression of increases, and give the reader the mean, or middle one between them.

The *Tuscan* order in *Vitruvius* is only seven diameters high, the *Trojan* column make it eight, the mean between these is seven diameters and a half for the height in this order.

The

Book II. The *Doric* order in *Vitruvius* is established at the height of seven diameters in temples, and seven and a half elsewhere; therefore seven is the lowest, which reduces it to the same height as the *Tuscan*: but establishing seven and a half as the common height, that of temples being an exception, he here takes the half diameter for the progressional encrease. In the *Coliseum* the *Doric* column measures nine diameters and a half. The difference between this extreme height, and the extreme lowness of *Vitruvius*, where he orders it for temples, is vast: the mean between them is eight diameters; which is therefore the mean measure of the *Doric* column.

The *Ionic* column, according to *Serlio*, should be but eight diameters in height; but in the *Coliseum* it is nine diameters and a half: the mean measure between these is eight diameters and three quarters.

The *Corinthian* column in the temple of the *Sibyl* is eight diameters and sixteen minutes; and in the *Forum romanum* it is ten diameters and six minutes: this is a vast difference in the antique, and shews what surprising liberties they would take. The mean measure between these is nine diameters and a third, which may stand therefore as the middle proportion of the *Corinthian* column.

The *Composite* is found so nearly the same in all the remains where it is seen, that its mean measure may be called ten diameters.

We find, both in the works of the antients and in the writings of the moderns, that the progression is not kept up in the height between the *Corinthian* and the *Composite* order: for the *Composite*, in the arch of *Titus*, and the *Corinthian*, in the *Basilic of Antonine*, have exactly the same proportional height of ten diameters: some authors also deliver their proper heights as the same. The answer to this is very short and plain: it strikes off the *Composite* from being a distinct order. The proportions of the *Corinthian* were first established. If the *Composite* has the same, it is only a variation of the same order; for it has been laid down before as a certainty, that the distinctions of the orders depend much more upon their proportions than on their ornaments.

We have separated both this and the *Tuscan* from the absolute orders, in our accounts of them; and this may serve as a proof that is not done without foundation.

Vitruvius has established this into a rule long since. He says expressly, that the variations they made in the ornaments of capitals in this manner, did not make an order different from the *Corinthian*, because the proportions were the same.

This author makes the shaft of the *Ionic*, and that of the *Corinthian* column, of the same height, the length of capital in the *Corinthian* giving the additional height for the progression: but there is no reason why it may not be made shorter, its capital answering to the proper progressional addition in height. *Scammozzi* makes the shaft of the *Corinthian* column very near equal to the shaft of the *Ionic*, but in the antique it is otherwise.

It is proper that the progression of height, in each order, should be equal; Chap. 10. it is fit therefore that we propose a method of making it so. We have shewn what is the variation among authors, and in the antique, on this head; the antique making it at a mean five semidiameters, and the moderns five and a half: let us, by way of bringing it to a regular proportion, call it five and ten minutes; this making in the whole one hundred and sixty minutes, may be divided with great ease and perfect regularity into four equal parts, each consisting of forty minutes, and these may be the sum of the several progressions: therefore, making the *Tuscan* column fourteen semidiameters and twenty minutes, the *Doric* may be just sixteen semidiameters, the *Ionic* seventeen and ten minutes, the *Corinthian* eighteen and twenty minutes, and the *Composite* twenty.

This is an exact and regular method of progression; easily computed, easily determined, and rests upon this, which is the most certain foundation in variable quantities, that it is the mean.

C H A P. X.

Of the INTERCOLUMNIATION.

IT was proposed, before we entered upon the consideration of the several orders distinctly, to treat of every thing that concerned them all: this we have now done with respect to their construction in every respect; and we come to the two last articles, which is their distances in buildings and the general proportion of their parts.

The distance or spaces between columns is what is called the intercolumniation, and it is an extremely essential article in building. We are at this time very well acquainted with the space that ought on all occasions to be left between columns. The antients have left us infallible rules, and the moderns have made an absolute and great addition to these rules, and an improvement upon them; this is the coupling of columns: a practice which is excellent both in respect of beauty and strength, and which never occurred to any of the great architects of old time. We are just to those antients; let us be as free to allow praise to the moderns where they have deserved it. This is an instance in which their title to it is indisputable; it is so happy a thought that we admire it, and so natural that we wonder it was not hit upon sooner. This gives us opportunity of often using the light and delicate instead of the heavy and massy orders.

Palladio lays down this rule: the intercolumniations may be a space, 1. of a diameter and half of the column; or, 2. of two diameters; or, 3. of two diameters and a quarter; or, 4. of three diameters; or, 5. of more than three diameters. In all these cases the measure of the diameter must be taken from the lower part of the column.

This is the general law, and according to this we see that the spaces between the columns must always be regulated according to the size of the columns, and measured from

N^o. XV.

Q 9

them:

Book II. them; but there is a liberty allowed in the five different proportions, which is extensive enough for all practice.

In buildings of the *Tuscan* order, among the antients, the architrave was always made of timber, and they allowed the spaces between the columns to be very large. It was in this maffy order alone that they used the fifth proportion, or that which was of more than three diameters; in the others they never brought their columns clofer than according to the first proportion, which is a diameter and a half, taken from the measure of the lowest part of the column. They had terms to exprefs the feveral diftances, which we have given, with their meaning, in the Introduction to this work, and therefore need not repeat them here.

We have feen that in the *Tuscan* order, which is the moft maffy, they allowed the largeft spaces between; and it was in the fame fpirit they determined when they made ufe of the fmalleft diftance, which is one diameter and a half; for we find it frequently practifed in the loftieft columns: but the intercolumniation of two diameters and a quarter, is the moft noble and moft beautiful.

Not only folidity but beauty is concerned in the proportioning the fpaces; and the architect will find the antient practice his great rule: for if thick and maffy columns be placed too clofe, they appear thicker and groffer than they are; and if the light and elegant be too diftant, they appear thinner than they are, or ought to be.

It is upon this principle *Palladio* has adjusted the intercolumniations to the orders, and has done it in a very happy manner. He obferves that the *Tuscan* order fucceeds beft with the intercolumniation that is more than three diameters, the *Doric* with fomething lefs than three diameters, the *Ionic* with that of two and a quarter, the *Corinthian* with that of two diameters, and the *Composite* with that of one and a half.

It is always beft that the columns in the middle of a building be in an even number; that the middle fpace or intercolumniation may be larger than the reft, for the advantage of a door or entry.

When galleries are made with arches and piers, the arches fhould be fo difpofed that the peers or pilafters between them be no lefs than a third part of the measure of the vacancy or fpace between, and thofe at the corners fhould be two thirds of the vacancy, that the building may be the ftronger.

When the weight above is very great, the pilafters or peers muft be equal in measure to half the vacancy or fpace between, or even two thirds, if requifite. We have the authority of the antient architects in this; for the former proportion is feen in the amphitheatre at *Cyena*, and the latter in the theatre at *Marcellus*: nay we have an inftance in the amphitheatre at *Verona*, that they fometimes made them equal to the whole fpace.

In ordinary buildings they fhould not be lefs than a third or more than two thirds of the fpace. They fhould properly be fquare, but they may be made flat, to fave expence and room.

C H A P. XI.

Of the general proportion of the parts of COLUMNS.

SUBMITTING so far to the general custom of sometimes placing columns upon pedestals, we shall in this place, in which we consider them under the last general head, admit that part as an essential. We have before disclaimed it in general use, and shall hereafter explain the exceptions under which it may be introduced with good sense and grace: here we must therefore accept it as a part, seeing there are occasions wherein it may be used.

We shall consider, under this article of the proportion of the parts, the entire order as composed of three: first, the pedestal; second, the column; and, third, the entablature.

Each of these three parts is composed of three portions. The pedestal has, first, its base; second, its die; third, its cornice. The column has, first, its base; second, its shaft; and, third, its capital. The entablature has, first, its architrave; second, its frieze; and, third, its cornice.

The height of the entablature is equal in the *Ionic*, *Corinthian*, and *Composite* orders; but the height of the pedestal, and that of the column, are different in each order, rising progressively from the most massy to the most delicate. The height of the entablature in the *Doric* is equal to a fourth part of the length of the column. The augmentation of height in the pedestal is regular. Of this we shall treat more largely hereafter, as we already have of the progressive augmentation in the height of columns, according to their orders.

The column has its base of the same height in all the orders, which is half the diameter of the lower part of the column.

The capitals are also of the same height in the *Tuscan* and *Doric* orders, being equal to that of the base. In the *Corinthian* and *Composite* they are also equal. The *Ionic* alone has a proportion peculiar to itself.

These are general principles, and delivered, as such only, here: they will serve as introductory to the particulars, when we come in the succeeding chapters to treat of each order.

These are the general proportions of the parts in height; their breadths or projections we are to consider under their distinct heads.

We have thus, in eleven chapters upon those several different articles which concern the orders in general, led the student through the preparatory paths to their particular consideration, upon which we shall now enter: but first desiring him to cast an eye back upon the variations he finds in these several heads, according to the practice of the ancients, he may see what is the extent in which his genius may display itself: let

Book II. him understand the dignity of his profession, and consider the architect as a person whose genius is not to be tied down by laws established by any one man, however great or judicious, but to expatiate through all those roads of freedom which the antient masters have travelled before him.

The columns in antient remains of *Greek* and *Roman* structures often differ, but they are all fine; why then should he follow one road to excellence when there are many? or why should he deny himself the advantage of a judicious variety, which is always beauty?

As the antients differed in their practice, the authors, who are all, except *Vitruvius*, of a modern date, vary in the rules they have drawn from that practice. Buildings have been erected upon the proportions established by one as well as another of these writers, and those very fine and noble: this is another proof that there is room for genius on one or other side of any strict established rule. It is greatly for the advantage of common architects that some one should have established rules, for others want such a direction: among all that have attempted this, *Palladio* has done it best.

SECTION II.

Of the three original ORDERS of the *Greeks*.

C H A P. I.

Of the DORIC order; its origin and use; and the difficulties attending it.

IN the explanation of the terms used in architecture, prefix'd to this work, we have given a summary and general idea of the several orders; and in the late chapters we have delivered what in general concerns their construction: these have been preparatory to the particular consideration of them on which we severally are about to enter in this place, and by the assistance of these accounts together the student will not find it difficult to understand every thing that shall follow. It is necessary that he should comprehend it perfectly, for all that is fix'd, all that is noble, and all that is most elegant in building depends upon it.

We treat the three *Greek* orders, which are the *Doric*, the *Ionic*, and *Corinthian*, distinctly; because they are properly and essentially different. We do not take from the merit of the *Roman* addition in the two others, the *Tuscan* and the *Composite*, tho' we do not rank them with these, but describe them separately: these three depend upon invention, the variations of the others are only borrowed.

In treating the orders in this distribution, we shall see the rise and progress of architecture. The *Greeks* took their first hints of it, as they did those of other sciences, from the *Egyptians*; but as they improved in all those sciences, they in a manner new made this: it may almost be allowed them to have invented it.

The orders we owe wholly to them: and the most simple was doubtless the first invented: this was the *Doric*. Let us set it before us in its antient plainness, and see how it rose to elegance in itself before fancy had devised another order: let us keep in our view the *Parthenion*, the temple of *Minerva* at *Athens*; in which the short and massy columns bear upon the pavement without a base; and the capital is a simple torus with its cincture, and a square plain and solid abacus.

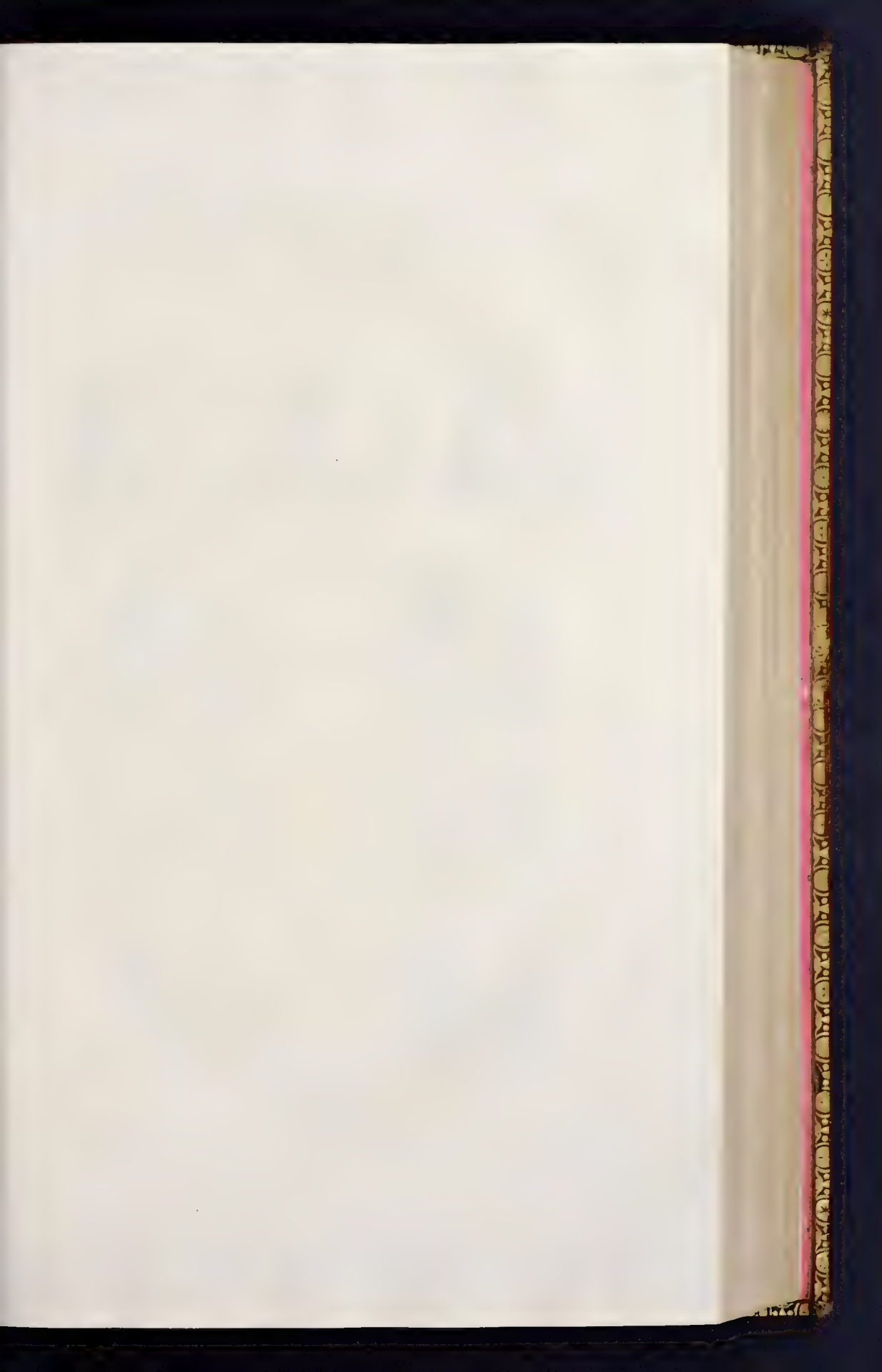
The *Doric* as it is the first and simplest, so it is the most judicious and best proportioned of all the orders. It is the most massy of the three; it was designed for the purposes of solidity and strength, and yet it is so proportioned that delicacy is by no means banished. It has a masculine and noble aspect: and is admired by many, who do not declare themselves so freely as they would do if it were as easy to execute, as it is rational to praise it.

Book II. It is by much the most difficult of all the orders to introduce and execute in a masterly manner : there are restraints in it to which the workman is subjected in no other. The alternate disposition of the triglyphs and metopes which decorate the freeze, give all this difficulty ; for they are limited in figure, and therefore perplex the architect in the use. The triglyphs are of a long square form, and the metopes are, and must be, perfect squares : for this reason the columns of the *Doric* never can be joined or coupled in the manner so happily invented by the moderns for the other orders. In coupling them either the bases must penetrate one another, or the metopes will be broader than high, and lose their figure of a perfect square, which is altogether essential : these are faults not to be pardoned, therefore they must not be committed ; but this is not all the difficulty. There occurs another instance of it in the returning angles, which it is difficult to get rid of. It is hard to avoid one of these two inconveniencies, either the bending a triglyph in curtailing the two next metopes, or the joining two metopes together without a triglyph between.

We have seen architects who have made no difficulty here, because they did not see the strict rule of the order ; they have blundered through, and their edifices being viewed by no more critical judges, they have passed without censure. We see the triglyphs folded, or half triglyphs, or metopes curtailed and enlarged, and they are passed over ; but the glory of the architect is to execute this order with purity : to make it answer all the purposes, yet be free of these barbarisms.

If it be asked whether this can always be prevented, the answer is plain ; there are occasions on which it is unavoidable, and a good architect will foresee them, and therefore will not use that order in such cases. The difficulty of avoiding a returning angle is greatest ; but this would too universally banish the use of the order were it allowed a reason : it is therefore fit to make a small allowance, and in this case it will be better of two evils to admit a double metope, than to shew a folded or half triglyph.

We allow the difficulties that attend the use of this order : and we advise the architect, in consideration of its beauty, to study to get the better of them ; not to give up the order. Let him consider with care this dangerous and perplexing division of the freeze, and see where, and by what means, he can remedy it. Let him leave vulgar shifts to common judges, he may be assured the eye of the judicious observer will always see the difficulty he has had to encounter, and will give him praise in proportion to his success against it.



BASES of Different COLUMNS.

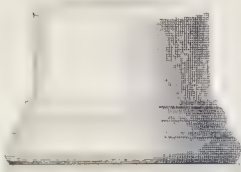
Pl. 19.

DORICK.

Attick Base
A PALLADIO.



COLISÆUM.



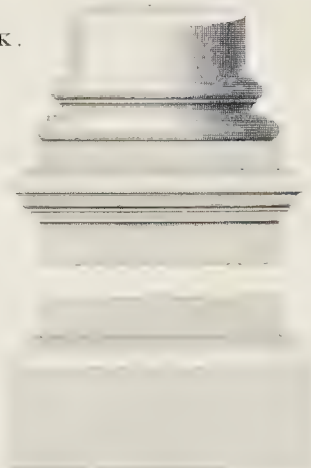
VIGNOLE.



A. PALLADIO.



COLISÆUM



IONICK.

Portico Pantheon.
CORINTHIAN.



Theatre of Marcellus.
IONICK.



A SCALE of SIXTY Modules
or One Module.

C H A P. II.

Of the base for the DORIC order.

IT has been observed before that the old *Doric* was without a base, its column resting immediately upon the pavement or floor. Beside the instance before given of the old *Athenian* temple, we find it thus without a base in the theatre of *Marcellus*, and other *Roman* ruins. It has been determined by *Palladio* that the *Doric* has no proper base.

Those who would give an additional beauty to the *Doric* column, order it a base which is called the *Attick* or *Atticurgick*, and is by much the most perfect and beautiful of them all.

Vitruvius gives no base to the *Doric* column; and he says that the principal difference between that and the *Ionic* is, that the *Ionic* has a base. But when we have raised the *Doric* column upon the *Attic* base the distinction is sufficient according to the late rules.

Though we at present universally give the *Attic* base to the *Doric* order, there are instances of another. In the *Coliseum* the *Doric* columns have a base; but it is not the *Attick*, but of a peculiar form and character. *Vignola* has also given another different from that.

We have therefore our choice to execute the *Doric*, in respect of base, in four manners: either 1. Utterly without one, as was the origin of the order; Or 2. With the *Attick* base, as is the custom of the moderns; or 3. With the *Roman* base, as in the *Coliseum*; or 4. With that of *Vignola*: but *Palladio* with perfect justice prescribes the use of the *Attick* base, no other being so elegant or proper.

This is indeed the finest of all the bases, as before observed, and the architects of judgment have been so sensible of its value, that they have borrowed it from the *Doric*, to which it was originally applied for the several others. In this there is nothing wrong, for it gives a grace to them all; and as it is not one of the parts that characterise the order, it is very allowable to transfer it into another. There is nothing in this borrowing and lending contrary to the true spirit of architecture: it may serve to render it more perfect: but on the contrary, when a part which characterises one order is transferred into another, it confounds the two, and becomes a bad kind of composed order, being neither properly one nor another. This the law of transferring of parts in the orders: let the student remember it is never to be violated.

The construction of the *Attick* base is this.

Its height is to be half the diameter of the column: this is to be divided into three equal parts; one for the plinth; the other two are subdivided into four parts, and distributed

tributed among three members, two torus's and a scotia between them; one of these four parts makes the upper torus; the other three are to be divided into two, of which one makes the lower torus, and the other the scotia or cavetto with its annulets. These annulets have their particular measure, for dividing the whole into six parts, the annulets take each one, and there remain the other four for the scotia.

This is the rule for the *Attick* base, according to *Palladio*: it is distinct, clear, and easily executed.

The whole projecture of the base must be a sixth part of the diameter of the column. The cincture of the column is as broad as half the upper torus; if it be divided from the base, its projecture must be the third part of the whole projecture of the base; but if the base and a part of the column must be of a piece, the cincture must be smaller.

Thus we see the *Attick* base consists of a larger torus below, a lesser above, and a scotia between them. It rests upon a plinth, and the cincture resting upon it is properly a part of the shaft, not of the base.

The next to this in beauty is that of the *Coliseum*, which may be called the *Roman* base of the *Doric* order. This differs from the *Attick* in that it has neither the lesser torus nor the scotia. There is only a blunt inverted cyma between the cincture at the bottom of the shaft and the large torus.

Vignola's base is still plainer than this. It has only a large torus and an astragal on the plinth; so that the cincture at the foot of the shaft makes part of the height of the base, which ought to have in all the other orders the semidiameter of the column below, without including this cincture.

We find variations in the proportions of the base of the *Doric* order in the antique remains as well as in the writings of the modern authors. *Vitruvius* allows ten minutes to the height of the plinth, but in the *Coliseum* it is eleven and a half. *Cataneo* allows it on the contrary only nine, and *Serlio* but nine and a half.

In respect of the great torus, *Vitruvius* we find sets it down at seven minutes and a half; that of the *Coliseum* is eight minutes; and *Scammozzi* makes his eight and a half.

As to the upper torus *Palladio* enlarges it by half a minute, and *Scammozzi* by a whole one.

Barbaro, *Cataneo*, *Viola*, and *De L'Orme*, make the lower fillet of the scotia larger than the upper one, but *Palladio* judges much better in making them equal. It is fit that in the other bases they should be of different breadths, because they touch different members to which they should be proportioned; but in the *Attick* base they only touch the two torus's, whose difference in size is so little that it need not affect these parts.

Perrault gives the projectures of the mouldings of the *Attick* base to the *Doric* order by the division of the module into five parts, of which three give the utmost extent of the bases of columns in all the orders. The first of these gives the projecture of the cincture at the bottom of the shaft; the second bounds that of the upper torus; and the third that of the lower torus and plinth. For the projecture of the scotia the middlemost of these three parts is again divided into three; taking one for the upper fillet, two for the under, and three for the depth of the hollow of the scotia. Chap. 2.

There is a particularity some have in the turn they give to the cavity of the scotia, hollowing it down below the edge of the lower fillet. We see this in the columns in the portico of the *Pantheon*, and some other pieces of the antique; but it is not so wrought in the theatre of *Marcellus*, or in a great many other instances. *Vignola*, *Scammozzi*, and *Viola* sink it below the edge of the fillet in this manner, but it is wrong: it gives no beauty, but weakens the edge, and makes it a receptacle for dirt: it is much better avoided.

The plinth of this base should be always kept plain and square; this is not the less an inviolable rule, though *Palladio* has broke in upon it: he and *Scammozzi* make it descend with a sweep to the nose of the cap of the pedestal. This is really to destroy this part of the *Attick* and *Corinthian* base: there is no authority for it in the antique, and it has a quaint, poor, and displeasing aspect. In the *Coliseum* we see the upper parts of the caps of the pedestals are cut with a sweep; but this is not taken from the plinth of the base of the column, which remains entire, but from the cornice or cap of the pedestal.

We have been thus particular with respect to the base of the *Doric* order, that the young architect may see what liberty he has; and where, by following what are called great authorities, he may do amiss: the precept of no modern writer is of equal weight with the practice of the antique, where that is absolute and universal, as it is in this instance. It is impossible to be too attentive to particulars, even to the least, in the forming of this order, because none is more perfect in its kind, none so nice or difficult to execute well, nor is there any in which an exact judgment will more shew itself, or be more admired.

The height of the entire column in the *Doric* order, as delivered by authors, is;

According to <i>Vitruvius</i> ,	} In temples seven diameters. In their porticos seven and a half.

According to *Vignola*, it is eight diameters.

According to *Scammozzi*, eight and a half.

In the antique we find it,

In the theatre of *Marcellus*, seven diameters and a half, and one sixth.

In the *Coliseum* nine diameters and a half.

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S f

Palladio

Book II.

Palladio orders it, when without pilasters, to be seven and a half or eight diameters; and if joined with pilasters, eight diameters and thirty five parts; that is, seventeen semi-diameters and one third.

The mean of the several measures is about eight diameters.

Its mean diminution is about one eighth part of its diameter, but in this the antique gives us instances of more variations,

Its best intercolumniation is the diastyle, which is having three diameters space between.

C H A P. III.

Of the shaft of the DORIC order.

THE article which principally concerns the shaft of columns in all the orders, is their flutings. We have already declared in general against these ornaments, and must observe here, that in the *Doric* they are less judicious than in either of the two other antient orders of the *Greeks*; because these flutings must be conceived, as they lighten, also to weaken the column, and that is least allowable in this order, which is calculated for strength.

As we find the *Doric* fluted however in the most antient remains, the architect has certainly precedent and authority for doing it; and as the flutings are different in this and the other orders, we have allotted this short chapter to the part which they concern.

The antients, who certainly erred in allowing any flutings to this column, have in some measure atton'd for it by the particular manner wherein they prescribe them to be made; for being sensible that all flutings must tend to weaken the column, and that in proportion to their depth, they have made those of the *Doric* shallower than in any other.

The flutings in the *Doric* column are not to exceed the number of twenty; they are also to differ from the flutings of the others in the manner of cutting them: they are to be brought so close to one another at the surface of the column, that there is to be no space but only a bare ridge left between them; and whereas those of the other orders are cut into an entire semicircle, these of the *Doric* are at the utmost to be cut only to the depth of a fourth, and it is sufficient if they are no deeper than the sixth of a circle.

It is strange that the antients, who saw here that deep flutings would be very wrong in an order designed for strength, could not perceive, or would not, that any flutings were wrong.

We shall treat with this freedom every part of the subject. The authority of the antique remains is greater than that of any author; but reason is to take place even of them, where it happens, which is very rarely the case, to differ from them. Probably the first executed columns in this order were plain abuses; early crept into the science, and good sense declares this to be one. Chap. 3.

In order to draw the flutings of the *Doric* order, if the architect will make them, the periphery of the column being divided into twenty equal parts, describe a square whose side is equal to one of those parts: from the center of this square draw the arched line, which makes a quarter of a circle from one corner of the square to the other; this will give them of that depth.

If they are to be shallower than this, which is better, instead of a square describe an equilateral triangle; the vertical angle of which shall be the center for the curve line. The first is the method of *Vitruvius*, and is the most used.

Instead of flutings we are told by *Vitruvius* in the same place, that architects sometimes make twenty cants, leaving them quite flat without hollowing. But this must be very disagreeable; for were there no other objection, the space of each cant is so small that the angles cannot be made distinct enough to be visible: beside, this also is against the rules laid down for columns in general.

The method of making the flutings shallow is preferable in the eye of reason; but yet it must be allowed that if any are made, it is better to fight they should be as deep as the method of *Vitruvius* cuts them; that is, a quarter of a circle: for then they are more distinct and conspicuous.

The shaft has its cincture or listel at the bottom, where it rests upon the base; and its cincture, with an astragal over it at the top. Over this astragal is a part called the neck, and by some the freeze of the capital: this is ornamented often with roses, and other little figures in carved work: it is by some accounted a part of the shaft, and by others a part of the capital. But the cinctures are properly understood to belong to the shaft; they had their origin from the rings of iron with which they surrounded the tops and bottoms of their old and original wooden columns, to prevent their splitting.

C H A P. IV.

Of the DORIC capital.

THE capital in the *Doric* order is extremely plain, but its simplicity is not without beauty.

It consists of an abacus with its cymatium at top, an ovolo under the abacus, three annulets under the ovolo, and under these a neck called also the freeze of the capital.

This neck rests upon an astragal, but that terminates the cincture, and is understood to be a part of the shaft.

The cymatium on the abacus is to be considered as a part of that member. It is a very singular addition, and is not met with in the antient *Doric*.

The height of the capital should be half a diameter of the column; this is to be divided into three parts; then the first above is to be subdivided into five. Three of these five are for the abacus, and the other for the cymatium: which being again divided into three, the listel takes one, and the cima resta two. The second principal part is next to be divided into three; one of these is for the three annulets or listels, which are equal, the other two are for the ovolo, and the projecture of this member is two thirds of its height. The third part remains yet to be disposed of, it is for the neck, called also the freeze of the capital. The whole projecture of the capital is a fifth part of the diameter of the column. The astragal is of the same height with the fillets, and is to be equal in its projecture to the lowest part of the column; the annulet is only half the height of the astragal.

These are the proportions of the *Doric* capital, according to *Palladio*. Others give them more plainly thus: its height, which is half the diameter of the column, is divided into three parts; one makes the abacus, the second the ovolo and three annulets, and the third the neck.

We shall see, in a succeeding section, in what manner the *Tuscan* capital is made to deviate, in that the ovolo possesses an entire third, and the astragal and fillet under it are taken out of the part allowed the neck.

Authors have taken a great deal of liberty in this capital; *Alberti* makes it almost half as high again as *Vitruvius*, whose measure others follow, and he gives the principal members different proportions.

Palladio and *Scamozzi* join with him; they enlarge the abacus and lessen the neck, though they do not alter the height of the entire capital. These are variations for which there is authority in the antique, and are instances of those liberties the architect may be allowed, and in which he may support himself by precedent. The *Doric* capital in the *Coliseum* is eight minutes and three quarters higher than the mea-

ture allowed by *Vitruvius*; and in the theatre of *Marcellus* it is higher though only Chap. 4. by three minutes.

In the latter the proportions with respect to each other are more different from those of *Vitruvius* than in the *Coliseum*; the abacus is much larger, and the ovolo less.

In the projecture of the *Doric* capital we see among the antique most surprising variations and excesses; in the opposite degree the proportion is no less than this, three parts being allowed as a mean measure; *Alberti* gives it but two of them, and he has some authorities in the antique; and in the *Coliseum* we see it has five such.

There are variations also in the character of this capital. In the *Coliseum* there is an ogree instead of the annulets, and *Alberti* has followed this. *Palladio* and most others put roses under the corners of the abacus, and in the neck of the capital.

If we reckon the projecture as a part of the character, we see how vast the variation is there: *Alberti* is joined by *Cataneo* in making it extremely small, and in the *Coliseum* it is vastly large. When we are accustomed to see the capital in its ordinary proportions, these variations have a strange appearance; the common or mean proportion, according to *Vitruvius*, is thirty seven minutes and a half, reckoning from the middle of the column; that of the *Coliseum* is forty seven and a quarter; and that of *Alberti* and *Cataneo* only thirty two and a half. We see the rule of *Vitruvius* followed by *Barbaro* and *Serlio*, and authorized by the measures in the theatre of *Marcellus*: there are other proportions in other authors; in *Palladio* it is thirty-nine minutes, in *Bullant* forty, and in *Vignola* and *Viola* thirty eight.

These are many, and they are some of them great variations: we are to tell the architect, that the proportions allowed to this capital, both in height and projecture, by *Palladio*, will always please; and that, while he sees how far he may wander from them within the bounds of authority, from writers of credit, or even from the antique, it is best that he take the liberty with moderation: let him be guided by a love of symmetry rather than a love of novelty.

Of the DORIC entablature in general.

THE entablature in every order consists of three parts, an architrave, freeze, and cornice. The architrave is the lowest, resting upon the capital of the column; the freeze is over this, and the cornice terminates the whole.

In the *Doric* order the entablature is of a very singular and striking aspect; and to speak of it with that freedom wherewith we propose to treat every subject in architecture, it has both its beauties and defects. Its great beauty is in the ornaments and division of its freeze, its principal defect is in the redundance of square mouldings, which give it a harshness.

In mouldings we may consider the round as the soft, and the square as the harsh; the former are as the concords, the other as the discords in music: a proper disposition of them is the source of true harmony; but there is in the *Doric* entablature something of that austere manner that we should perceive in a piece of music, abounding too much with discords.

Another defect in the *Doric* entablature is that it appears too heavy: we are aware it will be answered that the *Doric* is a strong and massy order; this is a reason why the entablature should be heavy, but there are degrees of propriety, and this exceeds them.

This faulty heaviness of the *Doric* entablature is principally from the great projection of the eve of the cornice; its large extent is loaded with vast mouldings, which have little support, and therefore threaten falling. Men can never admire a building in which they are not at ease; it is no matter that the whole is safe; there should also be an appearance of safety. In large stone buildings this projecture appears the most plainly faulty; it presents to the eye vast quarters of stone hanging out into the air, and it is impossible, even though one knows the soundness of the construction, to avoid the imaginary terror of their weight bringing them down.

This defect would be more commonly taken notice of if it were not for the beauty of the freeze, which is so singular and pleasing that it engrosses the attention. We shall presently enter on the subject of the division of this freeze, by triglyphs and metopes; and when those vacant squares last named are ornamented with taste, there results such an agreeable aspect from the whole, that it is not easy to take off the eye or carry it to any other part:

The several parts of the entablature are composed, according to *Palladio*, of the following members.

The

The cornice has for its uppermost member a cimafium; under this is an oggee; Chap. 6. under this comes the corona, or larmier; next under this is an ovolo; then a cavetto, and this rests upon the capitals of the triglyphs.

The freeze is divided by triglyphs which are oblong, and have each two entire and two half channels; and metopes, which are square spaces between them. These square spaces may be either left plain, or decorated at the pleasure of the architect. Above them is a square piece called their capital, and below are drops separated by a reglet.

The architrave is composed of two plain fascia.

In all the other orders the proportion of the principal parts is regulated by a division of the whole into twenty parts; but as it is particular in the *Doric* it is there done by a division into twenty four. Of these twenty four equal parts, six are given to the architrave, nine to the freeze, and the same number to the cornice, including the member that runs immediately over the triglyphs, and contains their capitals. This is the general division of the *Doric* entablature: for distinctness, we shall enter upon the consideration of its three parts separately, in the succeeding chapters. But before we treat of these it may not be improper to consider an entablature in general, according to its origin, intent, and use, in whatever order.

C H A P. VI.

Of the disposition of ENTABLATURES.

THE entablature consisted originally of pieces plain and strong, placed horizontally on the columns, and meant to support a roof or floor. Therefore, in nature and reason, that ought always to rest upon the supports flat and strait; and in its whole length there should be no breaks:

It is too common a practice in building to intrude upon both these original rules. The entablature is often in great edifices supported by arches instead of resting immediately upon the columns, and frequently it deviates from the right line, which is in reason its proper character.

The arches are a great blemish, because they make large pillars and imposts necessary, which rob the columns of their free air, by being engaged to them, and because the square form of these pillars is disagreeable. They are so many vaults which should be supported, but look unnatural as supports, and they are in these buildings, brought in at this place only to support the entablature. We see very sad instances of this in churches in many parts of *Europe*. These arcades by their swelling also force the columns to bear sideways, whereas their sole office in nature is to bear perpendicularly, and their upright position the source of their strength.

Book II. There is no excuse for this practice of carrying the entablature upon arches, but that it has too great a length to support itself, the columns being so distant. Arches are perfectly set aside in this use by the answer of reason, which is, that all entablatures that are so long, and have such distant supports, are in themselves faulty, and should have no place in a well contrived building: there is no need to spare columns. The student will here find all the proper intercolumniations; let him observe them, and his entablature will not need this foreign support. The happy modern art of coupling columns is a remedy for all the accidents under which such arches could be wanted; and by that means, instead of running into this idle and erroneous practice, we may make such parts of buildings as strong as they are delicate. The portico of the *Leure* in *France* is an instance of perfect taste in this article.

On the other hand, against the use of all angles and recesses in an entablature, we are to observe that it naturally represents a long piece of wood work, made to support a roof: can there be any need to execute this with angles and recesses? Nothing can be more foreign to reason than such a practice.

Entablatures, as they advance upon the columns, and retire in the spaces between, are all unnatural and false, for this plain reason; nor should the practice of the greatest master stand against good sense where its dictates are so very plain.

The number of projecting angles and returns in these works, please the vulgar eye, and charm such as judge of the merit of a piece of architecture by the labour in the execution; but they appear contemptible to the judicious and chaste imagination.

If these things must be called beauties, according to the vulgar opinion, let the judgment of the strict architect represent them to him as beauties he cannot use; the poets *discreetly blot* many a fine passage: let him out of propriety reject what might have been admired.

Projective fronts may seem to entail a necessity of this practice; and where it so happens that a necessity of doing what is wrong occurs, the builder must submit: but these projective fronts are altogether arbitrary. Separate pavilions along the front are the only legitimate projections of this kind, and they are detached from the principal work: the rest is caprice and fancy. The perfect architect should admit nothing into his edifice for which he cannot give a solid reason; and none can be given for these projections: they disfigure the entablature, and though a common builder is necessitated to fly to them, because he has not taste enough to give variety otherwise, he who better deserves the name of an architect, will never find himself under that necessity.

We are aware this will be called strict: and we answer that we do not desire to tie down even the best architect severely to it; but it is fit he should regard what is completely right in every article.

We have introduced this general doctrine of entablatures here, because that of the *Doric* is the most difficult of any to manage, and therefore might be made a pretext for faults; and because its proper intercolumniation being larger than that of any other order except the *Tuscan*, that distance between column and column might make the use of arches appear necessary. We now return more strictly to the particular order, and to the proportions of the parts of its entablature.

VARIATIONS in the DORIC ENTABLATURES.

PL 20

COLISEUM.

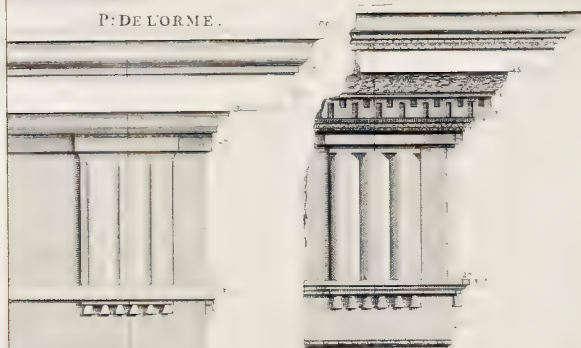
TEMPLE of MINERVA.

A PALLADIO.



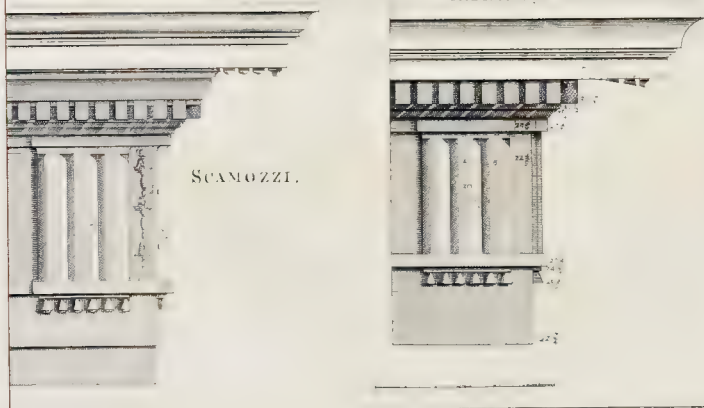
P. DE LORNE.

BATH of DIOCLETIAN.



THEATRE of MARCELLUS.

SCAMOZZI.



PL 20

C H A P. VII.

Of the DORIC architrave.

THE *Doric* architrave is plain and simple; it consists only of two fasciæ and a reglet with its listel; nor is there any thing in it to strike the eye, except the drops which hang into it from the bottoms of the triglyphs. Custom has established it as a law, that the drops thus hanging from the triglyph be of the form of a square pyramid: there is nothing in reason against their being round, but the eye is best judge in which shape they have the better effect.

The proportions of the architrave, as settled by *Palladio*, are these:

Its entire height is to be half the diameter of the column; and this being divided into seven parts, one of these makes the tænia or reglet, whose place is at the top of the architrave immediately below the freeze, and above the drops of the triglyph, which, as we have observed hang down into the architrave: the projecture of this reglet is equal to its height. Of the six remaining parts one is given to the drops, and the listel under the reglet: these drops are to be six in number under each triglyph, and the height of the listel is to be a third of that of the drops. The remainder is divided into seven parts, and of these the first or upper fascia takes three, and the second four.

For the proper formation of the drops the architect is to observe, that they are to be somewhat distant at bottom from one another: and that their proportion is this, that their breadth be three times as great at the bottom as at the top.

This is the strict and proper architrave of the *Doric* order, according to the generality of authors, and we find their determination supported by many instances of the antique; but there are great variations. In the most antient remains of the *Greeks*, we see the *Doric* architrave with a single face; and in some great works of the *Romans* we find it divided into three faces, and ornamented in a particular manner.

Among the antique remains that correspond with the architrave as laid down here, are the theatre of *Marcellus* and several others; in the temple of *Minerva* at *Athens* the face is simple, and perfectly plain; and in the *Coliseum* it is ornamented with three faces, and an ogree above, and has no drops.

In the ruins of *Albano* and the baths of *Dioclesian*, it has two faces separated by mouldings, as they are in the *Corinthian* order; and there are drops under the upper ogree. We have seen that *Palladio* gives two fasciæ, and does not separate them by mouldings; and *Scamozzi*, *Alberti*, and *Viola* give the same. Some make the drops round from the triglyphs, against which we have said there is no rule but the general custom for making them square, the round one being reserved for the under part of the mutules.

Of the DORIC freeze.

THE freeze in the *Doric* is the most elegant part of the whole; it contains all that can be called ornamental in the order, for the rest is beauty of a nobler kind, depending on proportion. But we see by this distinction how much more universally elegance is admired than simple greatness. Every eye is struck with the division and ornament of the *Doric* freeze, but only a few of the judicious know the order when it is executed without the decorations.

This is seen oftener than those not accustomed to architecture are aware; and those whom a little smattering serves for knowledge, take it in this condition for the *Tuscan* order.

The reader will not demand why a part so beautiful as the ornament of the *Doric* freeze is left out, when judgment points the use of the order; the builder will say it is to save expence, but we have given a much stronger reason in the first chapter on this head; the difficulty of managing it. All architects are fond of this order, but we see those who have most skill are least free in using it, because of this difficulty: it is none to the others who do not see it. This difficulty arises from the triglyphs and metopes, which must have a regular and perfect division.

The proportions of the freeze and its parts, according to *Palladio*, are these.

The height of the freeze is a module and half, the module being a semi-diameter of the column; so that its height is equal to three quarters of the diameter of the column at the bottom. The breadth of the triglyph is to be one module, so that its form is an upright long square, whose breadth is two thirds of its height: the capital of the triglyph takes up a sixth part of a module.

The triglyph is to be divided into six parts: two are to be given to the two channels in the middle, and one to the two half channels in the sides; the other three make the spaces between the channels.

The space between two triglyphs is called the metope, and this must be an exact square; this may be ornamented or left plain: the metopes in antique remains are usually decorated with skulls of oxen, or instruments of sacrifice, as basons and the like, this order having been first used in temples. Sometimes they carry trophies, and other ensigns of honour, sometimes emblems, and often merely ornamental figures.

The two entire channels in every triglyph are sunk from top to bottom perpendicularly; the two half channels at their extremities run also perpendicularly.

For the projecture of the triglyph, its face being divided into twelve parts, this Chap. 8.
 is to be one and a half of those parts: *Vignola*, who allows it but one twelfth, gives palpably too little, because the channels must have a proper depth to make a right angle, which they always must be so wrought as to have. The half channels ought not to descend to the freeze; they must have their proper depth for the form, and therefore the projecture we have here given the triglyph is not a determination of fancy, but of necessity. The triglyph must have some thickness left below the linking of the half channel, and this renders a sufficient projecture necessary.

Palladio allows half a minute for this thickness, and as we see works continually executed according to his principles with a most religious punctuality, we find this will do: but somewhat more is better; and the antients have shewn us that a great deal more is no blemish. Let those who would see this examine the triglyphs in the theatre of *Marcellus*; they will find the thickness there a minute and two ninths. We propose giving, on all these occasions, three proportions; 1. That of *Palladio*, the best of all modern writers. 2. The excess above or below this, observable in the antique. And 3. A mean between the different excesses; the mean thickness in this case is three quarters of a minute and one ninth.

We have followed the customary way of expression in treating the capital of the triglyphs as a part of the freeze; but let us write distinctly here. This which is called the capital of that ornament is a moulding; freezes have nothing to do with mouldings, it properly is to be accounted one of those belonging to the cornice. The projectures it makes over the triglyphs are supposed to constitute it a part of the freeze, but the mouldings which cap the corbels in a freeze are a like instance, and they are always reckoned parts of the cornice.

In the distribution of these ornaments of the *Doric* order this is the first law, that there be a triglyph directly over the centre of each column. This is founded on reason, as all other laws in architecture are, or should be: to understand the proper disposition of things we must look into their uses, it is proper therefore that the ends of them rest, where they can, immediately over their centre. The number of them is necessarily much greater than that of the columns; for we have determined their distance by the square of the metope, and we have also given this order an intercolumniation particularly large. We see therefore, that though some may rest on the columns, and such must do it exactly, yet there are others which must fall in the spaces between them.

Let the architect take care that the triglyphs be in an odd number in the larger spaces between the columns. He will see this rule strangely intrenched upon in common practice, but there is nothing in all architecture so miserably murdered and mangled by vulgar builders as the *Doric* order. We shew him what should be done; what is done can be in general but of little use, except in shewing him what he is to avoid.

In the projecting angles in whole columns there is no avoiding the putting a half metope on each side of the angle.

Book II. If the metopes are ornamented the care is, not to shew a bas relief folded; and the way to avoid this, is to carry those of the projecting angle to the end. In general, we are to advise the architect, when he intends to use this order, to have the ornaments of the freeze continually in his eye, and to consider what will be their disposition. If he find difficulties he cannot conquer, and that entail upon him faults altogether unavoidable, he is either to submit to them or to relinquish the use of the order on that occasion; and this latter choice is preferable.

C H A P. IX.

Of the cornice of the DORIC ORDER.

THE height and vast projecture of the *Doric* cornice are not only terrible to the vulgar eye, which, not comprehending the supports, supposes they threaten ruin; but, in some measure to the architect. We have many instances where to avoid these inconveniences; they have put the *Ionic* cornice over the *Doric* order in the place of its own, and some in which they have invented a cornice for it from fancy: but this is a liberty by no means to be taken. The cornice is a regular and a characteristical part of the order: the substituting the *Ionic* in its place is confounding the two; and the working from fancy is making a kind of composed order also, instead of the *Doric*. Let us be free on this occasion: those who understand the order perfectly see how connected its cornice is to the other parts, they therefore will not follow fancy instead of method; and those who do not see this proportion cannot do it well.

There is, on many occasions, a merit in lightening the *Doric* cornice; but let us understand it perfectly before we attempt to do this. We have named the weight and projecture of the *Doric* cornice as a blemish in that order, but let the architect be careful that he do not fall into a greater in avoiding them.

There are in a manner three *Doric* cornices, one plain, one with dentells, and one with mutules. The plain one is seen in *De L'Orme* according to *Palladio*: and the proportions are these:

The whole height of the cornice is to be divided into five parts and a half: of these two are for the cavetto with its listel and the ovolo, these constituting the lower part of the cornice: the cavetto, is to be less than the ovolo by the breadth of the listel, the remaining three parts and a half are for the corona and the two cimas. The corona is to have two thirds of a module or semi-diameter in projection, and to have on its plain underneath six guttæ or drops, and three or six in breadth, with their listels over the triglyphs, and some roses or other ornaments over the metopes.

The drops are to be round in this place, as they are square under the triglyphs. These are to be segments of cones, as the others are of pyramids, so that they represent so many bells; and those under the corona must be perpendicularly over to those exactly under

under the reglet. As this under part of the corona cannot be seen in the front view of the column, it is represented separately. Chap. 9.

In the construction of this cornice the *cima recta* is to be an eighth part larger than the corona. It is to be divided into eight parts; two of these go to the listel, and the other six to the *cima*. The projecture of this is to be seven parts and a half; this raises the architrave, freeze, and cornice to the height of a fourth part of the length of the column.

These parts and their proportions, delivered by *Palladio*, are very nearly those of *Vitruvius*. *De L' Orme* allows it no mutules, whence it is we call his the plain cornice.

The mutules of the *Doric* cornice, so extremely admired by many, receive the drops which *Palladio*, as we have already seen, places immediately over the triglyphs: their disposition is the same, but the number of drops is but eighteen, nine parts of the four and twenty, which make the whole entablature, being left for the cornice. The first of these is for the capital of the triglyph, the five next are for a cavetto, a mutule, an ogee, and the corona, and the rest for mouldings above the corona.

The drops cut under the mutule are in rows of six in front or breadth, and three in projecture, and they are six deep; so that the whole number is eighteen: the points or tops of these little cones are supposed sunk in the under surface of the mutule or corona. The mutule is to have a hollow groove on the edge, but not elsewhere, like the groove under the corona in the *Ionic* cornice, to be described hereafter.

Thus we see the soffit, or ceiling of the eve, is applied, as the freeze, for the reception of ornaments; and the disposition of them is in common to each part. The mutules over the triglyphs are separated by lozenges over the metopes; and as the mutules have drops answering to those under the triglyphs, the lozenges have carved work by way of ornaments, at the pleasure of the architect, answering to those of the metopes.

In respect of these there arises another difficulty in the execution of the *Doric* order, for the angles will be always perplexing. In the returning angles there will be no difficulty to the architect who observes what has been laid down before, but in the projecting angles the space between the mutules near the angle will be longer than it should be.

Above the two half metopes of the projecting angle there should be in the ceiling of the eve a long square on each side; so that the remaining space becomes a perfect square, and serves as a field to the lozenges.

De L' Orme gives no mutules to the cornice; and indeed the other variations in the antique, and among authors, are so great that we may say there are three kinds.

Book II. The first is the cornice of *De L' Orme*, which, as we see, is very plain; and it is the same in *Serlio* and *Cataneo*. In this there are neither mutules nor dentels.

The second has dentels, and it is supported by instances in the antique, particularly in the theatre of *Marcellus*.

The third is that with mutules; and this has no dentels. This is *Palladio's*, *Alberti's*, and *Ligorio's* also, give this, and support it on the authority of many ancient remains.

There is beauty in the plain cornice, more in that with dentels, but most in that with mutules: and this is to be rationally recommended to the architect, because *Vitruvius*, who is, and ought to be, as an author, the oracle in these things, says mutules are an essential part of the *Doric* order, whereas dentels belong to the *Ionic*.

We have proposed, in many things, to free the architect from that servile attachment which is commonly observed to any thing that is *Palladio's*. There is nothing in that author but what is fine, but there are many very fine things not in him: we would have *Palladio's* works a great part of his studies, but not the whole.

He who servilely follows *Palladio* must use the cornice with mutules for the *Doric* order. He sees what elegance there is in the disposition and ornament of these mutules: he sees that they are declared by *Vitruvius* an essential part of the order, and are supported by fragments of the antique: why then should he not use them? If he say this part of the cornice is lighter in *Palladio's* manner, because the mutules have less projection, it is true; but the rest of the cornice is not light, nor intended to be so: why then should this part of it be made light at the expence of a great beauty, which may be introduced into it with all the authority imaginable? We would have our student an admirer of every author of merit, and of *Palladio* most of all, because he has most; but we would have him be a slave to none.

There has been a singularity introduced into the *Doric* cornice, which is the making its great cimaise with a cavetto instead of the ogee. This has been done upon a supposition that this was what *Vitruvius* meant when he speaks of the *Doric* cimasia; but in reality what he calls by this name is the hollow over the capital of the triglyph. The using a cavetto in this place therefore is perfectly right, but in the other it is weakening an order intended for strength, and we see has been founded on an error.

We shall close this chapter on the *Doric* cornice, with some observations on the projections of cornices in general, which can no where come in so properly.

We see a rule in *Vitruvius*, which says, that in all the members of architecture the projection should be equal to the height; but certainly he meant it in a more limited sense: it is true of the entire cornices of entablatures, but can be carried no farther; for though the projection of these should be equal to their height, that of several of their

their members must vary from this law on one side or the other. In the dentel the projecture is less than the height, and in the corona it is and must be greater. Indeed, although the equality of height and projecture would be a very safe practice, we do not see it exactly followed either in the antient remains or the writings of authors. In the antique the projecture is usually less than the height, and our authors generally make it greater: the equality may therefore be called a mean measure. Chap. 9.

It has been said that one of the great arts in building is to vary the projecture of the cornice in its height according to distance; and in order to give it a harmony with the whole building. There is something in this, though not so much as has been pretended or imagined; and they err who suppose the antients made the differences. We see in their cornices on this principle, they have made great variations: but in these, as in many other instances, they have not been influenced in them as we imagine. It is well to take in the idea of the whole building when we consider any part, ever so minute; and we have recommended this as the great rule in forming a whole of proportioned parts: but the consideration of height and distance did not influence the antients in the variation of proportional height, and the projecture of cornices, as these persons fancy.

They say, the greater the distance the larger the antients made the projecture; but this is not true: for in the portico of the *Pantheon* the projecture of the cornice is less than it is on the inside of the temple, where it is much nearer to the eye: neither have these projectures been varied, as some imagine, in proportion to the size of the module that regulates the dimension of the building; for we find it equal only to the height, or even less, in the largest of their structures, as in the temple of *Peace*, the columns in the *Campus Vaticanus*, and the baths of *Dioclesian*, which are antique buildings of the largest module we know. In these great ordonnances the projecture is less than in many of the little ones. We shall see this by comparing those just named with what we see in the temple of *Vesta* at *Tivoli*.

In the same manner we see small buildings where the projecture is less than in great ones. We do not infer from this that the antients had less in their eye than has been imagined by some in this article, but that they had more than has been conceived by any. They took in not only the height and size of the building, but the construction of all its parts, and they adapted the projecture of their cornice, not as these suppose to its height or distance, but, to the face of the whole building. This was their manner, and this we recommend to the architect who would distinguish himself by the elegance of his structures. It is a thing above rule and must be the effect of genius.

What we can do by way of proposing a general standard, is to give him the greatest and the least projectures, as they are delivered by authors, or are found in the antique; and from these computed together to establish a mean measure. He will there see what extremes may be allowed, and where lies the medium.

Scamozzi makes the *Ionian* cornice three minutes more in projecture than in height. *Palladio* makes the projecture of the *Corinthian* cornice half a minute more than its height: and *Vignola*, in the same order, makes the projecture greater by four minutes: in the *Composite*, the cornice in *Palladio* is one minute larger in projecture than height; and in *Scamozzi* it exceeds in the same manner by a minute and a half.

Book II. These are the cornices in which authors make the projecture greater than the height : on the contrary, the *Ionic* cornice of *Palladio* is no less than seven minutes taller than it is in projecture ; and the cornice of the same order in *Vignola* is higher than its projecture by one minute and three quarters.

In the antique we find also variations. The *Ionic* of the *Coliseum* has the projecture greater than the height by ten twelfths of a minute, where the column is twenty-five feet high : and the *Doric* order, in the same structure, has the projecture greater than the height in the cornice by three quarters of an inch in a column of thirty-one foot. On the contrary, the *Ionic* of the theatre of *Marcellus* has the height greater than the projecture of the cornice by eleven minutes, where the size of the order is eight and twenty feet ; and, in the *Corinthian* of the *Coliseum*, the height of the cornice is also greater than its projecture by three inches, the size of the order being thirty foot and two inches.

From these, and a great multitude of other variations that are found by measuring the antique remains, we find that the excesses went very high on both sides, insomuch that a mean measure of proportion is to make the height and projecture equal, as *Vitruvius* meant to propose them. But an exception must be made against this general rule for the case of the *Doric* when it has mutules : their length obliges the architect to give the cornice more projecture than it has height. When the cornice in this order is made plain, as directed by *De L'Orme*, the projection may be made equal to the height, as it is in the cornices of the several other orders.

C H A P. X.

Of the pedestal appropriated to the DORIC ORDER.

IT has been observed, in speaking of the *Doric* order, that it was antiently used without a base ; much more may we be sure that it was used without a pedestal. Indeed pedestals are not an essential part of any order. The column is entire when it has its base, shaft, capital, architrave, freeze and cornice. But the pedestal is become appropriated, though it is not necessary to the order : and each has its own, the proportions differing according to the order for which the pedestal is designed.

Vitruvius mentions two kind of pedestals, the entire and the fingle. The entire or continued pedestal supported a number of columns without any division : the fingle or simple pedestal he says was as a stool supporting only one.

Vitruvius wrote from the antique, and we see instances of what he says in the remains at this time. There are continued pedestals in the temple of *Vesta* at *Tivoli*, and that of *Fortuna virilis* at *Rome*. The columns on fingle pedestals we see in the theatre of *Marcellus*, and the arches of *Titus Septimius* and *Constantine*.

By these we see the antients did use pedestals, and that they varied them according to the order, for these are for the *Ionic*, *Corinthian*, and *Composite*, and they go on encreasing nearly in the same manner as the columns under which they were placed. Taking all the remains together, we find that the antients, at a medium, gave five modules, or semidiameters of the column, in height to the *Ionic*, six to the *Corinthian*, and seven and a half to the *Composite*. Chap. 10.

Upon this foundation the writers in architecture have given rules for the height and construction of entire pedestals for the five orders; and in general they augment them from one order to another, according to what they see in the practice of the antique.

Some authors have indeed made their pedestals of equal height in all the orders; others give a considerable augmentation: but as the antients, though they agreed in the augmentation from the *Ionic* to the *Composite*, yet differed in the degree of it, so the moderns also, while they in general allow of an augmentation in all the orders, from *Tuscan* to *Composite*, yet differ what the degree of it should be.

In this variation we have taken the method we observe on other occasions. We give the proportions of *Palladio* for the workman who chuses to be on the side of security, for they are in all things beautiful, and will always be allowed to be right. After these we deliver the proportions according to other authors, that he may see what variations he may be allowed: and finally, we add the mean measure from these opposite extremes. We hope by this means to convey the necessary information, and to establish truth.

The pedestal of the *Doric* order, according to *Palladio*, must be thus constructed: its die, or trunk, must be a perfect square; its breadth equal to the projecture of the base of the column; and from its measure those of its mouldings must be taken: these ornaments are at the base, a socle, torus, reglet, and cavetto with its fillet: at the cornice, a cavetto, fillet, drip and reglet. The die is to be divided into two equal parts: the base with its plinth must have one third of its height, and its cap mouldings one half; and to this the plinth of the base is to be joined.

This kind of pedestal is to be seen in the arch *de Lioni* at *Verona* to the *Corinthian* order.

The height of the *Doric* pedestal, according to *Palladio*, is three modules twenty minutes: according to *Scammozzi*, it is two diameters and four fifteenths of the column: *Vignola* makes it five modules and four minutes; and *Serlio* makes it six modules.

It is justice to *Palladio* to say that his is the best of these proportion, but perhaps it is not the best possible; therefore the architect will do well to examine all that he can between them. The medium among them all is about four modules and twenty-four minutes.

The pedestal being composed of the base, the die and the cornice, these parts are yet to be considered as they have various different proportions among the antients and moderns.

Book II. The proportion generally observed in the antique is, that the base is greater than the cornice; and of the two parts of which the base is composed, the socle is greater than the mouldings, which together make the rest of the base.

Among the moderns these proportions have not exactly been observed. *Serlio* and *Vignola* make the socle less than the mouldings. This seems to be imitating the bases of columns in the bases of pedestals, for they have always the plinth less than the mouldings by a great deal. But this is a vicious imitation, for it tends to confusion: the practice of the antients is every way better.

Palladio has followed the general proportions of the antique, but he is more regular, in all pedestals making the base the double of the cornice. *Scammozzi* follows him in this, and he makes the socle double to the mouldings in the *Doric*, *Ionic*, and *Composite*.

We have seen what is the height of the *Doric* pedestal, and occasionally the height of all the others: the breadth of the die, in all pedestals, is to be equal to the projecture of the base of the column: and in the same manner we may give, from the mean of the antient works and modern rules, certain proportions for the construction of the three parts in general.

The base with its socle may be allowed to be two sevenths of the whole pedestal; the cornice may be allowed to be one seventh part, and the socle or socle two thirds of the base.

This is so near the practice of the antients and the doctrine of the moderns, that it is surprising for general a rule could be laid down.

Having thus far explained the nature of pedestals in general, and of the *Doric* pedestal in particular, which is the immediate business in this place, we shall close this chapter with a few considerations of its mouldings and parts.

The proportions of the mouldings of the base may be thus found; divide the third of the whole base assigned them into seven parts; four of these are to be given to the torus next upon the socle, and three to the hollow with the fillet under it. These are its three certain members.

The projecture of the torus is that of the whole base. *Palladio* gives a square or reglet to this base between the torus and the fillet of the cavetto; and *Scammozzi* puts in the same place an inverted cima. *Vignola* and *Serlio* give it only the socle, torus, fillet and cavetto, which being a plainer base becomes a plain order. Indeed it is reasonable that if pedestals must be used, they should be suited to the order, as well in their ornaments as proportions. Thus the base of the *Tuscan* pedestal should have but two members, that of the *Doric* three; and so the others, more as the orders to which they belong advance in fineness and elegance.

The cornice, which is called also the cap of the *Doric* pedestal, may be divided into nine parts: it has a hollow with its fillet, and has a drip crowned only with a square: the drip has five of the nine parts, and its square one. This is the plain cornice of the *Doric* pedestal, but some give it a member more.

We have now gone through the form, proportion, and parts of the *Doric*; Chap. 10. and, upon the whole, we cannot but see it to be a natural, well proportioned, and noble order. There is reason to call it the first in propriety, as it was the first in invention; for the *Doric* was the order which gave the first rules for regular building.

We see that the finer orders, the *Ionic* and *Corinthian*, were the offspring of a more licentious imagination, elegance being the first consideration in them, as use was in these: and as some improved architecture by the addition of those kinds; others, charmed with the masculine and noble air of the *Doric*, bent their minds to the adding elegance to it: thus they by degrees gave it more height in proportion to its thickness, and added mouldings and ornaments.

These gave the *Doric* of later times an air so different from that of the earliest, that the *Romans*, who established the *Tuscan*, did little more than revive the old plain *Doric*, against the later and more decorated column of that order.

We read of a temple built by *Dorus*, and dedicated to *Juno*, as one of the first of this order. We see the remains of that of *Minerva* at *Athens*; and the remains of the theatre of *Marcellus* at *Rome*, give us a glorious idea of what use may be made of it in great edifices.

The *Doric* may be used alone, or as the lower order where there are others. Its proper place is in the ground, or in a basement story; and though we have thus largely delivered the proportions of its pedestal, we must add that no order does better without one.

Vitruvius complains of the disadvantageous restriction in the triglyphs and metopes; and he mentions, as one remedy, the pycnostyle intercolumniation, where there would come only one triglyph regularly between every two columns; or the aræostyle method, in which there come three triglyphs between each two columns. The first of these methods is extremely improper, because it is against all rule that massy columns should come so close. There is indeed only one proper intercolumniation for the *Doric*, and that the judicious architect must reconcile to the disposition of these essential ornaments of its frieze.

Of the IONIC order.

THE *Ionic* order is the second in antiquity ; it is more elegant than the *Doric*, for that was intended in the addition of it to that first plain and more simple kind. We have observed that the *Doric* has great perfections, but that it also has its defects : these are avoided in the *Ionic* : the *Greeks* saw them, and they obviated them in their new invention. We may say with truth, that the *Ionic* has not the perfection of the *Doric* in its proportion ; but that it is without defect. They were excellent judges who invented the first order, and they established the truth of proportion there.

As they afterwards added the *Corinthian* to the *Doric* and *Ionic* orders, the *Ionic* may be called the middle kind between the strong and the delicate ; and it keeps the same place when we take in the *Tuscan* and *Composite* and have all the five ; for one of them is added at one end of the list, and the other at the other. As it has not the strength of the *Doric* it has not its massy look, and as it has not that extreme elegance of the *Corinthian* it is not so slight. It is one of those middle stature which, in the human form, are accounted the most universally agreeable : its lines, neither too gross nor too fine, please with their uniformity. The *Ionic* is not a commanding or striking beauty, but it is one that is always sure to please.

As the *Doric* has been always understood to represent a well-proportioned man, the *Ionic* may be considered as the image of a well-proportioned female, not the girl, for the elegance and slenderness of the *Corinthian* more naturally is brought in for that resemblance, but the woman. The volutes of its capital, which are the most distinguishing part of its character to the eye, have been supposed to represent the hair of the head curled ; but their origin is more naturally referred to the twisting up of a piece of bark in drying, the first columns of all kinds having been trunks of trees.

We are told the temple of *Diana* at *Ephesus* was of this order only : we see glorious instances of its beauty among the *Roman* ruins in the temple of *Fortuna virilis*, the theatre of *Marcellus*, and the *Coliseum*. It is in all these perfectly beautiful, yet in no two of them exactly alike : we shall enter into the nature of its variations in the succeeding chapters, and the student comparing the several columns will see that he is not to be ty'd down to any one strict law in the construction of the order, for that the antients were not. They deviated, within the limits of judgment, from what they saw with approbation in the works of others ; and let him who would establish himself a character in the science do the same.

The *Ionic* order is an excellent decoration when used singly in an edifice ; and as it is of the middle degree between the plain and the rich, as well as between the massy and the strong, none is so fit to be used alone ; for we naturally look for some other order under the *Corinthian*, or over the *Doric*.

When

When it is used in conjunction with the others in buildings of several stories, it is to be placed upon the *Doric*, and under the *Corinthian* or *Composite*, sustaining the third, and adorning the second story. Chap. 12.

Although the freeze of the *Ionic* gives no particular difficulty in the working, not having that perplexing and necessary division in its ornaments which embarrasses the architect in the *Doric*; yet there is not that perfect ease that might be imagined here. The fore and hinder parts of the antient *Ionic* capital are different from the sides; and altho' this be an accident of great beauty in the whole, yet there is a difficulty in managing the work when this order is to turn from the front of the building to the side. This is the only inconvenience, and in treating of the capital we shall shew the remedy.

The antients were subjected to the same inconvenience that we are, and we shall explain not only how they conducted themselves, but how the moderns have avoided the same difficulty by other means.

C H A P. XII.

Of the IONIC base.

IN treating of the *Doric* we have had occasion to describe a base called the *Attic* or *Atticurgie*, as commonly used to that order, when it has one, in antient works: the same is frequently also used to the *Ionic*; but the *Ionic* has a base of its own, though this is often substituted for it. Reason is indeed so much on this side, that though the proper *Ionic* base stands authorised by *Vitruvius*, *Palladio* approves the use of the *Attic* in preference, declaring it the most agreeable. We need not describe the *Attic* base here, that having been done in a preceding chapter; but for those who shall chuse to use the proper *Ionic*, we shall give its parts and proportions according to *Palladio*, and add the result of the practice of the antients and of reason.

The *Ionic* base is in height a semidiameter of the column, and is composed of a large torus placed immediately under the cincture of the shaft, a scotia under this, then an astragal, and under that another scotia which rests upon the plinth.

To find its proportions the semidiameter of the column, which gives the height of the whole base, is to be divided into three parts; one of these is for the plinth, the projecture of which is a third part of its height: the two other parts are to be divided into seven; three of these go to the torus, and the remaining four are divided again into two parts: one of these is for the upper scotia, and the other to that below, which must have no more projecture than that above. The astragal must have an eighth part of the scotia: the cincture of the column is a third part of the torus of the base, but if the base be made a part of the column the cincture may be smaller.

Book II.

This is the *Ionic* base of *Vitruvius*, which *Palladio* has, as in most other instances, copied; he seems to have understood it as a duty, for in this he has given the words of that author very faithfully, and with the utmost care, although he prefers, with reason, another base to this order.

Indeed the *Ionic* base is a very ill-contrived one, and offends the eye as well as the judgment, being against the true principles of nature; it has the appearance of a base inverted, for the larger part of it is uppermost: the heaviest and the largest part, according to all rules, ought to be the undermost, but we see the contrary there; the natural order is therefore reversed, and there wants the appearance of strength which results from a more just proportion: the great torus has for its support only two weak scotias, and an astragal; the eye is hurt, and supposes there is danger of its breaking off.

In all things relating to the column, where there is a diminution it is to be upwards; the diminution here is downward, and nothing can be more unnatural: the lower part of this base is small, and it encreases vastly in the torus, which is its uppermost member. It is this which has occasioned the best architects neglect of this base, and their substituting the *Attic*, which it is best to do. In the mean time it were to be wished that every order had its peculiar and appropriated base, and here is room for the genius of some architect to display itself in invention; we have, in the objections to the *Ionic* base of *Vitruvius*, shewn what are the principles on which it is to be constructed. There is no one antique remain in which the *Ionic* base of *Vitruvius* is seen: and, among the moderns, *Alberti* and *Viola*, with some others, use the proper *Corinthian* base for the *Ionic* column also. *Vitruvius*, who devised this base for the *Ionic*, says it may be used also for the *Corinthian*; those authors, on the other hand, give the *Corinthian* base to the *Ionic*: this we shall describe hereafter. *Vitruvius* has not given the projectures of his *Ionic* base, but the architect who shall chuse to use it may proceed thus: let him establish a module of twenty minutes, or one third of the diameter of the column, and let him divide this into five parts; two fifths and a half are to be given to the projecture of the torus; two to that of the astragals; one and a half to the fillet which is under the torus; one and three quarters to the fillets next the astragals; and two and three quarters to the fillet which lies upon the plinth.

We are not to omit that *De L'Orme* proposes another *Ionic* base, which he says he has found in antique remains; this differs from *Vitruvius* only in having two astragals of different bigness between the plinth and the fillet of the first scotia. The weakness of the fillet next the plinth is the greatest objection of all to *Vitruvius's* base.

It is most probable that the projectures of bases were originally alike in all the orders, and we find they made them sometimes greater and sometimes less in the same order. The base of the *Doric* has the same projecture in the *Coliseum* with that of the *Ionic* in the temple of *Concord*. Among authors we also find the same uncertain manner. *Serlius* gives a greater projecture of base to the *Tuscan* than that of the *Composite*, and *Scamozzi* gives a greater projecture to the base of his *Composite* than of his *Tuscan*.

OF ARCHITECTURE.

Vitruvius allows to bases in general a fourth of the diameter on each side, but this Chap. 13 is much more than is any where to be found in the antique: yet speaking of the *Ionic*, which we have been describing in particular, he scarce makes it larger than a least of the antique. In this, as in all other cases, we recommend to the judicious architect to consider what is a mean, and then regulate himself, according to his judgment, within the limits of either excess. This mean he will find, by a full calculation, to be about eighty minutes.

C H A P. XIII.

Of the shaft of the IONIC column.

IN the *Ionic* the height of the entire order is, according to *Palladio*, nine diameters: this includes the shaft with its base and capital. We find it taller in proportion to its thickness in some of the antique remains, and shorter in others; but neither the ancient architects, nor modern authors, have varied so much in this as in most of the others. The mean measure in height for the entire order may be set down at seventeen femidiameters and one third.

It has its cincture at the bottom, where it rests upon the base, and another at the top, over which is an astragal, under the echinus of the capital.

We find a liberty taken in the diminution of this column, as in the other orders; we have observed before, that although a diminution is a very necessary and essential thing in all regular columns, the proportion of it in general is not at all settled or regulated; nor do the antients seem to have followed any general rule. If we would take their examples into consideration, we find in the *Ionic* of the temple of *Concord*, the shaft of the columns being thirty six foot high, and four foot two inches and a half thick, the diminution is ten minutes and a half: in the temple of *Fortuna virilis* the height of the shaft is twenty two foot ten inches, the diameter two foot eleven inches, and the diminution seven minutes and a half: and in the same order, in the *Coliseum*, the shaft is twenty three foot high, two foot eight inches and a quarter diameter, and the diminution is ten inches.

The other variations we have taken notice of already, but with respect to this the architect sees how he may change it according to his pleasure. But the regular proportion, taken at a medium, for the diminution of this and other orders, is about eight minutes.

The best intercolumniation for the *Ionic* order is that of two diameters and a quarter of the column. This gives it a very well proportioned distance between the diameters of the *Doric* intercolumniation, and that of the *Corinthian*, which is only two.

When

Book II. When the *Ionic* column is fluted, a very different method is to be observed from that which is used for the *Doric*; but this is common also to the *Corinthian* and the *Composite*; that of the *Doric* only being singular. In the *Doric* the flutings are only twenty; in the *Ionic* they must be at least twenty four, and they may be thirty two. *Vitruvius*, and the general practice of good architects, authorise this; (but there are not wanting exceptions,) though there are no authorities for it in the antique. There is but one building of the *Ionic* antique at *Rome*, where we see the columns fluted; and this is the temple of *Fortuna virilis*, and there the flutings are only twenty.

Whatever be the number of flutings in the *Ionic* shaft, their depth always distinguishes them, for they are cut to a full semicircle.

These flutings are sometimes filled up with a plane, or twisted piece; in the first they are called flatted, and in the other cabled columns: but this is to be done with moderation and discretion.

The cabling, or other filling up, should not be carried higher than one third from the base, and it has the best look when the columns have no pedestals; it should never be used but when the *Ionic* order stands upon the pavement, or is the first order; when they have an order under them, they should be either plain in the shaft, or have the flutings vacant.

The intent of this cabling or filling up is only that the sides may not be left too weak by the flutings; there is a real use therefore in defending the part of the column that is exposed to blows and injuries in this manner, while there is a lightness given to the upper part, which is always the effect of flutings; but, in strict justice, we are to look upon the utility of filling them up as a proof that flutings are in reality a work of fancy rather than of judgment.

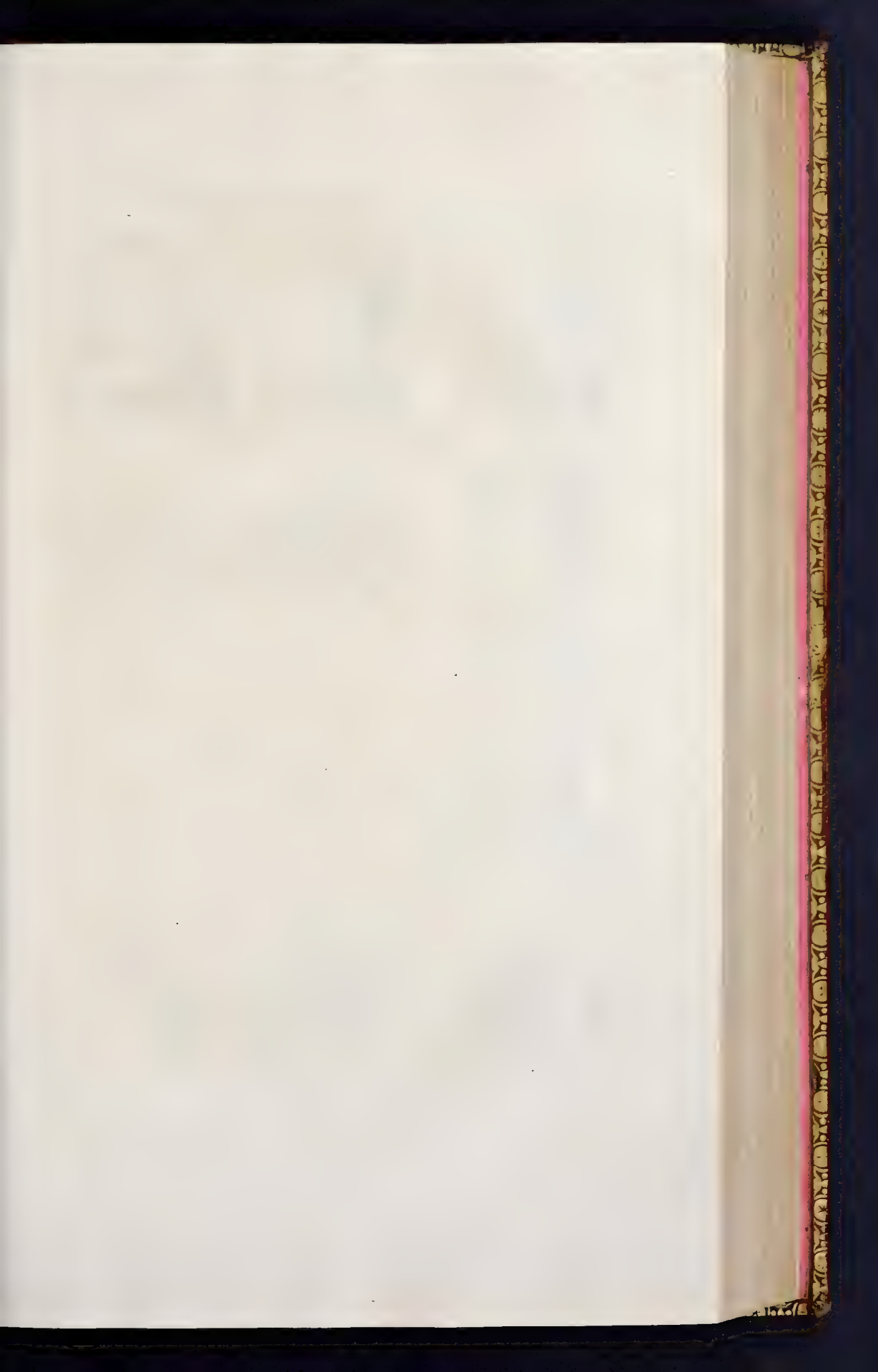
We see the flutings in some works only filled up near the edge of the sides: this is a singular and not very warrantable practice; it expresses a weakness, which it would be better to prevent than to have recourse to such contrivances to remedy.

It will be observed by the critical reader, that against what we establish as a rule, the columns on *Constantine's* arch are fluted, though they stand upon pedestals; but this is to be answered easily, for that arch is manifestly composed of remains of other buildings, and those columns had probably no pedestals in their original place.

In cutting these flutings in the *Ionic* shaft the architect is to make each division between them a third part of their breadth; this division in general is called the side, and its front the list. Thus each twenty-fourth part of the surface of the column being divided into four parts, three of these are for the fluting or hollow, and one for the list.

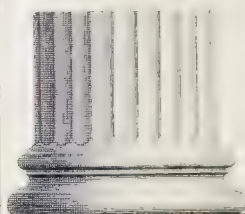
There is variation in this as in other respects, but this seems a middle proportion.

There are three ways of terminating these flutings on the shaft; they may be terminated round in the manner of a nich, top and bottom, which is the most usual and the

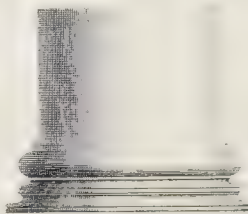


VARIATIONS in BASES and IONIC CAPITALS.

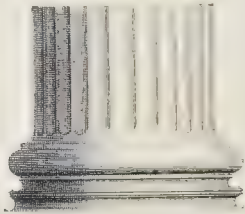
Fluted DORIC.



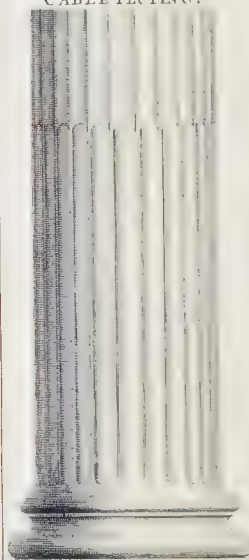
IONIC BASE DE L'ORME.



IONIC BASE VITRUVIUS.



CABLE FLUTING.



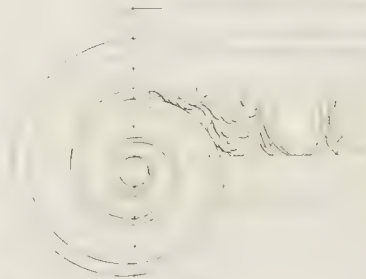
IONIC
Modern CAPITAL.



Ancient CAPITAL.



PALLADIUS Scheme for the VOLUTE.

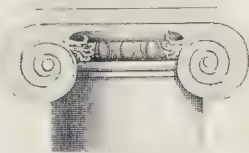


Eye of the VOLUTE.

Temple of FORTUNE VIRILIS.



THEATRE of MARCELLUS.



COLISEUM.



To Mm.

most pleasing method; or they may be cut off quite strait; and finally, they may be made in a manner just contrary to the first and general practice, the naked of the column making a semicircle on the fluting. Chap. 14.

C H A P. XIV.

Of the IONIC CAPITAL.

WE here enter upon the examination of a great and elegant piece in this elegant part of architecture. The *Ionic* capital has been admired even by those who have but partially understood it; and the more it has been considered, the more it has been applauded by the judicious. There is great invention in it, and a particular character; so much that it never fails to distinguish itself on the most slight and careless observation. Its particular beauty arises from its volutes, which have a very happy effect.

The *Ionic* capital consists of an abacus; the volutes, with their hollows; an ovolo, or quarter round, and an astragal. This is their disposition, counting from the top. The astragal, which is the lowest member, rests upon the cincture of the column; the hollows of the volutes are placed just over the ovolo, and are continued in a very beautiful manner in the forming of the volutes, which are twisted spirally, and are supposed to represent a piece of bark laid upon a vessel whose rim is represented by the ovolo, and which has shrunk and curled itself up in this manner in drying.

The proportions of the *Ionic* capital, according to *Palladio*, are these.

The foot of the column being divided into eighteen parts, these are to be the measures. The length or breadth of the abacus is to be nineteen such parts, that is one eighteenth more than the column: half of this is the measure of the capital in height; it is therefore nine of these parts and a half: of these the abacus, with its cimastium, take one and a half: there remain eight; and the volute is made in the following manner: one of the nineteen parts is to be taken from the extremity of the cimastium within; and from this point a line is to be let fall plumb: this line is called the catheta, and it passes through the centre of the volute. Where the point falls upon this line, which separates it into four and a half above, and three and a half below, there is the centre or eye of the volute: this must be one of the eight parts in diameter: from this point a line is drawn which intersects the catheta at right angles, and this divides the volute exactly into four parts: a square is next to be formed in the eye of the volute, and its bigness to be half the diameter of the eye: two diagonal lines are to be drawn on this, and upon them are to be marked thirteen points, the centre of the eye being one: these are so many centres on which the point of the compass is to stand to mark the volute, in the order of the numbers marked in the design: the astragal, which some reckon a part of the shaft, not of the capital, stands right against the centre of the eye of the volute: the volutes are as thick in the middle as the projecture of the ovolo, which reaches beyond the abacus as much as the eye of the volute: the hollow or channel of the volute is to be even with the shaft of the column above: the astragal turns

Book II. round under the volute, and is all the way visible, the supposed slenderness of the volute making it give way to the supposed strength of the astragal, from which it is every where equally distant.

Originally the *Ionic* capital had but two of its parallel faces ornamented with volutes, the other two fronts had balusters reunited by an intermediate apple. This had no inconvenience while the voluted faces of the capital presented themselves in front; but the first projecting angle, the first return the baluster'd face was seen. This had two disadvantages: either the capitals of a whole range of columns presented their balustered faces in front, which had a very bad effect; or the capitals of the two corner columns in a portico presented a different facing from all the others. This was the common choice in two such inconveniences, but it was very bad.

The *Ionic* capital rested with this inconvenience among the antients. *Scamozzi* has the merit of having perfected it: he has shewn the method of making four parallel faces, and all voluted.

This ingenious author, content with making the four faces alike, preserved the square plinth, which left the thickness this conjunction makes of equal volutes through the whole: but later architects have improved farther, and have disposed this thickness in such a manner that it goes always enlarging below: they have also sloped and bent the square plinth, making it follow the bending of the faces of the volutes. This perfects the *Ionic* capital: it is in vain for the genius of the architect to attempt any thing farther.

The abacus of the *Ionic* capital consists of an ogee and fillet: the rind is hollow under this, and presses upon the ovolo or quarter round: the points in the eye of the volute serve for centers to the four quarters, of which each of the three revolutions that form the scrolls consist. Moving the foot of the compasses from point to point, and drawing a quarter of a circle from each, there will be formed the twelve quarters, which make the spiral circumvolution of the scroll.

The thickness of the edge, or border, which is on the face of the volute, must go narrowing by little and little till it comes to the eye. This border is raised above the volute, one twelfth part of the breadth of the rind; and as the rind grows narrower and narrower, and this border diminishes proportionably, its elevation ought also to diminish; and this diminution must be determined by the breadth of the rind, of which it is always to be a twelfth part.

This border is described by a second draught, in the same manner that the first was; placing the foot of the compasses in twelve other points very near the first, namely, at the fifth part of the distance that is between the former; under which they are to be, reckoning toward the centre of the eye.

To find the projecture of the abacus it is the usual practice to give the ogee and fillet a projecture beyond the perpendicular line, equal to the height of the ogee.

The projecture of the ovolo is equal to its height.

This

This member is carved in the usual manner, and five of the eggs are to be cut in each face of the capital; but only three of the five are to appear entire, the two that are next the volutes being in a manner covered by three small husks which issue out of a leaf, the stalk of which lies upon the first circumvolution of the scroll. Chap. 14

These are the volutes on the front and back of the capital: the side-faces, when different, are baluster'd, or have the representation of cups of pomegranates, called balusters or balausters, which are double, having a pomegranate in the middle; the edges towards the volutes *Vitruvius* makes two twelfths, that is the breadth of the eye. The contour of the pomegranate he calls the girdle or belt; but his semicircular out-line does not agree with what we find in the antique, in which the form is irregular. This baluster is carv'd with great leaves, as the pomegranate is cover'd with smaller: they are intended to represent laurel leaves, and are rang'd like fishes scales.

As we find variations in many other things in the practice of the antique architects, so we do in this capital; the proportions of *Palladio* are those of *Vitruvius*, but we see capitals of very different kinds in this respect among those admir'd remains. The height of the capital is eighteen minutes in the *Coliseum*, and in the theatre of *Marcellus* it is twenty one minutes and two thirds; and in the temple of *Fortuna virilis* it is twenty one and a half. The ovolo in the temple of *Fortuna virilis* is larger than all the rest of the capital; and in the theatre of *Marcellus* it is less than the rind. In the temple of *Fortuna virilis* the volute is only twenty three minutes and a quarter; in the *Coliseum* it is twenty four and a half; and in the theatre of *Marcellus* it is twenty six and a quarter: these are great variations, and yet they all stand in admired works, and all are beautiful. In the same manner, the breadth of the volute is twenty three minutes and a third in the *Coliseum*; in the temple of *Fortuna virilis* it is twenty five and a quarter; and in the theatre of *Marcellus* it is twenty four.

These variations are not only found in antique remains, but are preserved in the writings of authors who found themselves upon one or other of them. We see *Palladio* makes the ovolo larger than the rind, and in this most agree with him; but *Alberti* and *Scamozzi* make them equal. In some of the antique buildings the eye of the volute does not exactly answer the astragal at the top of the column: but though some writers also follow this, the other way is preferable. The faces of the volutes which usually make a strait flat, are somewhat curved in the temple of *Fortuna virilis*; the circumvolutions going all the way advancing outwards: we see them form'd in the same manner in some of the *Composite* capitals of the *Romans*, as in the arch of *Titus* and *Septimius*.

In the temple of *Fortuna virilis* the edge or border of the scroll is not plain, as in other places, but is accompanied with a fillet; and this is a singular and very beautiful addition.

In the baluster'd capitals the leaves which cloath the cup are plain, long, and narrow, as in that of the theatre of *Marcellus*; or they are, according to *Palladio's* figure, beautifully ruffled. In some antique remains we find them large, as in the temple of *Fortuna virilis*, where they resemble those olive leaves sometimes cut in the *Corinthian* capital. On

Book II.

On the angular columns in the same temple of *Fortuna virilis*, the two faces of the volutes are joined together at the outward corner, and the balusters meet in the same manner in the inner corner; by this means they appear with volutes on all sides.

We have mentioned *Scammozzi's* improvement, which most of the other writers follow, by which he makes all the four faces alike; taking away the balusters, bending all the faces of the volutes, and hollowing them inward as in the *Composite* order.

Scammozzi, though he has thus perfected the *Ionic* capital, yet might have finished it more elegantly if he had a little more closely followed the *Composite*, from which he took the hint; for his volute is every where of equal thickness, whereas in the *Ionic* like *Fortuna virilis*, and in the *Composite*, it goes enlarging itself very beautifully downwards.

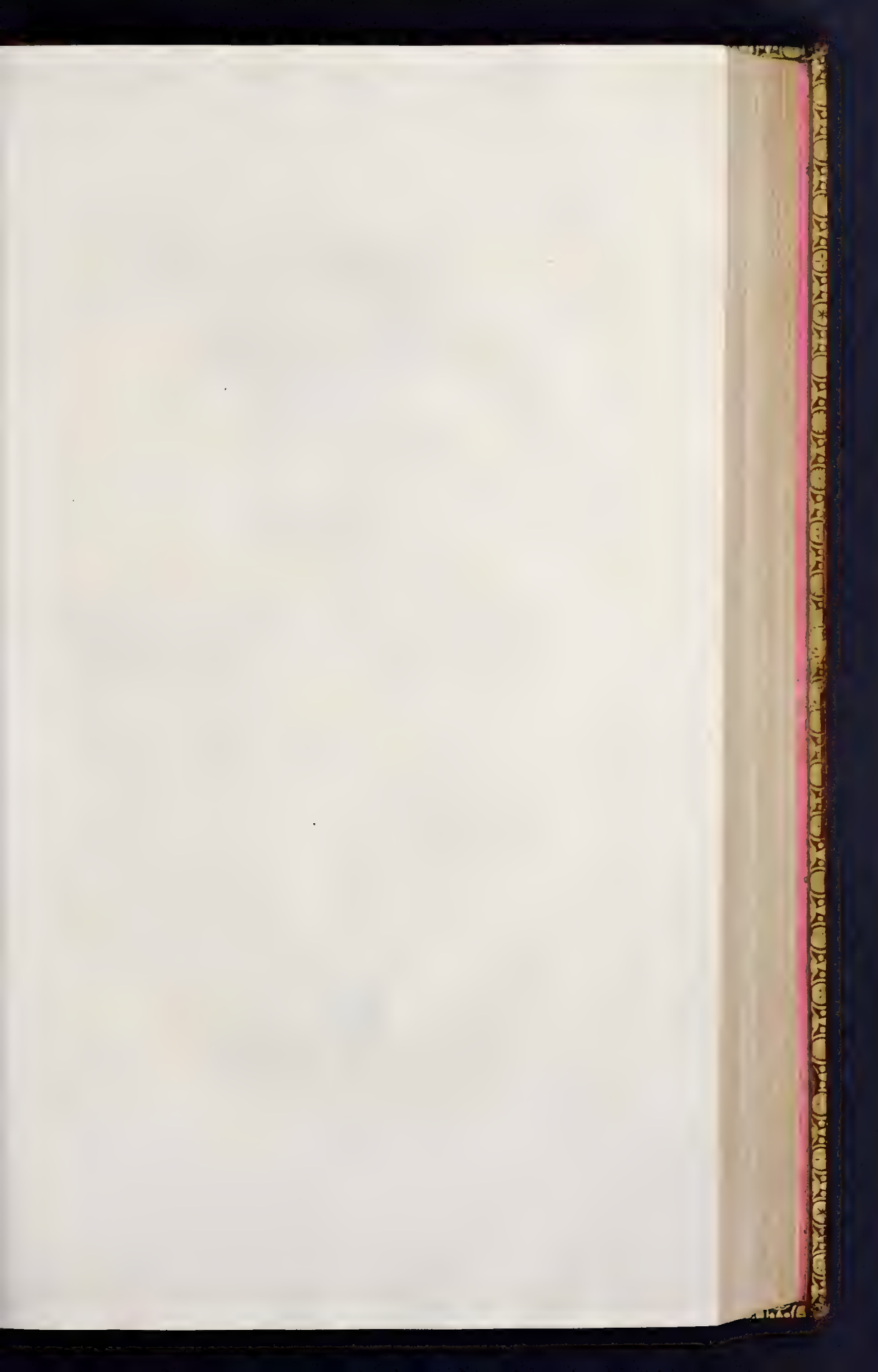
Scammozzi causes the volute to spring from the ovolo as a vase, after the manner of the modern *Composite*: it is the modern only that has this, for in the *Roman Composite* the bark passes over the ovolo, and under the echinus strait, and returns only at its extremities which form the volute. The method of making the *Ionic* bark spring thus from the ovolo, leaves the abacus without a support, being only an ogee, not like the square firm plinth of the *Doric*. In this *Scammozzi* has departed from the *Ionic* of the antients, and from truth and propriety at the same time.

Scammozzi makes the abacus two ways, leaving the choice to his readers; one way is with a sweep, as the volute, as it is in the *Composite* capital; the other is strait and perfectly square, as it is in the antient *Ionic*. We see it thus in the temple of *Fortuna virilis*, where the abacus does not extend itself on the corners of the volutes, there being only a leaf, which coming from the corners of the abacus, turns itself down upon the volute, and descends till it comes just against the eye of the scroll; and still more to distinguish this from the *Composite*, there is no flower between the volutes.

Later architects have added an enrichment to the *Ionic* capital, which even *Scammozzi*, in his rage of improvement, never thought of: this is the making festoons, which spring together with the husks of the volutes, from the flower whose stalk lies upon the first circumvolution of the volute.

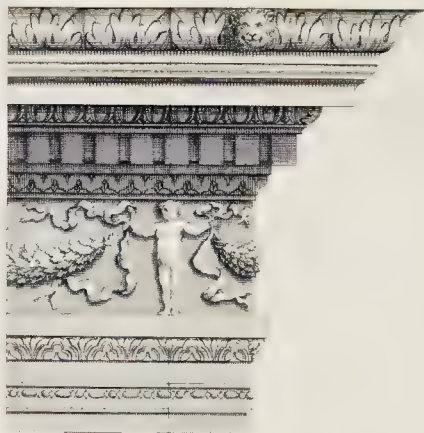
Vitruvius makes the volutes to signify curls of hair, and those who invented these festoons seem to have intended that they should represent curls of hair hanging down on both sides the face. They would thus have the volutes represent large locks of hair twisted up, and these festoons the curls, but this is a false prettyness; the intent of the volute not having been the hair of a woman but the rind of a tree.

One singularity more we are to name concerning the *Ionic* capital in the temple of *Fortuna virilis*, which is, that whereas it is commonly supposed they are made more oval and broad sideways than is customary, this is the contrary of the truth; for in the perfect and finished capitals in this ruin, the volute, so far from being oval breadthwise, is so upwards and downwards, being twenty six minutes and a half high, and only twenty three and a half wide.



IONIC ENTABLATURE to the TEMPLE of FORTUNA VIRILIS.

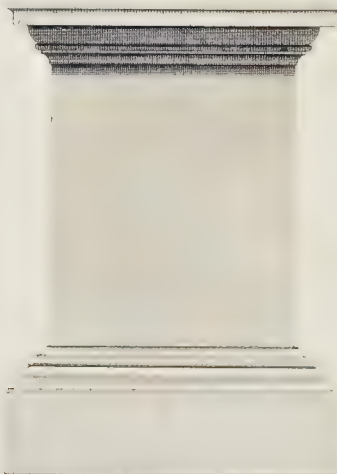
Pl. 22



PEDESTAL to the TEMPLE of FORTUNA VIRILIS



PALLADIO'S IONIC PEDESTAL.



CORINTHIAN BASE.



1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 100

Pl. 22

We see therefore, that this capital is a very fit subject of examination as well as admiration : for it is by much the most singular of them all. Its proportion is very particular, but its variation in the old remains is not greater than in the others ; these were liberties the antient architects took : fancy corrected by judgment was their first guide, and they followed it under the same regulation, in the same manner, through all their works ; not permitting an example ever so beautiful to tie them down to a dull and measured imitation ; but varying according to the idea of the whole building.

C H A P. XV.

Of the entire entablature in the IONIC order.

WHEN the antients designed beauty, they seldom failed to keep up the character through every part ; we have not a stronger instance of this than their architects have left in the *Ionic* order. We have seen the beauties of elegance, simplicity, and proportion, in its column, so far as the shaft and capital are concerned, and we find the character in all these respects perfectly retained in the entablature. Its elegant simplicity is peculiar, and as it answers to the rest of the order, perhaps may be said to excel any of the others in truth.

The whole entablature in the *Ionic* order makes a fifth part of the height of the column ; this is the proportion of *Palladio*, and the several parts have the following measures. The whole being divided into twelve, the architrave is to have four, the freeze three, and the cornice five ; these several parts we shall, for more distinctness, consider separately in two succeeding chapters.

With respect to the entablature entire, as we have given *Palladio's* dimensions, we shall shew the architect what others have also determined, and how far they are authorised by antique remains, the rules they lay down being all drawn from these.

The measure established by *Perrault* is two diameters of the column for the entire height : for its division he first makes a measure of the whole, consisting of twenty parts, and he gives six of these to the architrave, six to the freeze, and eight to the cornice : this we see differs from the measure of *Palladio*, who makes the architrave larger than the freeze ; but these are points in which there has been more variation. *Vitruvius* makes the freeze larger than the architrave, and many consider him as the most certain oracle. *Palladio* does not use lightly to dissent from him ; and here the medium seems to be the making these two parts equal, as is done by *Perrault*. *Vignola* and *De L'Orme* have followed *Vitruvius*, while his professed pupil *Palladio* departs from him ; but *Palladio* has sufficient authority in the antique, for the architrave is larger than the freeze in the *Ionic* of the temple of *Fortuna virilis*, and in that of the theatre of *Marcellus*. *Serlius*, *Cataneo*, and *Viola*, follow *Palladio* and these examples : *Alberti* has been *Perrault's* master, having allotted these exact proportions.

Which ever way the entablature is made in this respect, there is the same character of elegance about it ; but as simplicity is also essential to it, this is best preserved by the equality of these two parts.

Book II. A great beauty in this entablature is the having few square members. They are the harsh and dry parts of these ornaments, and the round and swelling are their greatest beauty: the others must be introduced to give variety, but there must be great care this is done with taste; and in no part of the antient architecture are they so happily united as in this beautiful entablature.

C H A P. XVI.

Of the IONIC architrave and freeze.

PALLADIO, who makes the architrave in this entablature larger than the freeze, divides it into five parts; of one of these five he makes a cymasium, and the rest he divides into twelve, and out of these he measures the three fasciæ, which are allowed to the architrave in this order: three of the twelve parts are given to the first fascia and its astragal, four to the second and its astragal, and five to the third.

This then is the proper construction of the *Ionic* architrave; it consists of three fasciæ, their astragals, and a cymasium; these three which differ in height begin with the least and end with the greatest: the first fascia, which is smallest, rests upon the abacus, and is terminated at top by its astragal; the second, which is larger, rests upon this, and is crowned with its astragal; the third, which is biggest of all, is terminated instead of an astragal by a cymasium, and on this the freeze rests; these are the parts and their disposition.

To determine the projectures, take a measure of twenty minutes, or a third of the diameter of the column; divide this into five parts, and then a quarter of one of these fifths is given to the projecture of each face; and one entire fifth to the cymasium and its fillet. This makes one fifth and a half of a third of the column's diameter, for the projecture of the whole architrave.

We have given the general proportions, let us now see the variations from them in the great works, and the doctrines of great masters.

Vitruvius makes the cymasium less, and he allows it only the seventh part of the architrave, whereas we make it the fifth; this is its proportion in the theatre of *Marcus*, and in other antique remains it is much greater; in the *Coliseum* it is two ninths, and in the temple of *Fortuna virilis* two fifths.

As it is found various in the antique, so the rules differ which are laid down by authors; *Serlio* and *Bullant* make it little, according to *Vitruvius*; *Palladio*, *Vignola*, *Alberti*, and *Viola*, make it larger.

We have given astragals to terminate or separate the fasciæ, as *Palladio* has done; but we see vast variations in this respect in the antique; there is but one astragal in the

the *Ionic* architrave of the temple of *Fortuna virilis*, and that is in the middle of the second fascia, not between two, as we put it.

Scamozzi borrows an ornament from the *Corinthian* order, and puts an astragal under the cymaſium.

If we may determine between ſo great authorities, the plainneſs which *Vitruvius* gives this architrave, by cutting off the aſtragals, is too great; it is true ſimplicity is the character of the *Ionic* order, but then it is an elegant ſimplicity: That plain ſimplicity of three unſeparated faces in the architrave would better become the *Doric*; here we are to approach toward the ornament of the *Corinthian* entablature, for the *Ionic* is to be a medium between the plainneſs of the *Doric* and the great elegance of that order, and this mean is happily hit by the addition of aſtragals between the faſciæ: in this *Palladio* refined with judgment upon the principles of this great maſter; we ſee him in this order varying freely, and in this part perfectly right.

Indeed *Vitruvius* is ſingular in his doctrines on theſe heads, and allows too great a liberty to the fancy of the architect; he places the diſtinction of theſe orders in the form of the capital alone, and makes the *Corinthian* ſometimes borrow the entablature of the *Ionic*, and ſometimes even of the *Doric*; but this we muſt diſapprove, theſe compoſed orders introduce confuſion. Each entablature is ſuited to its order, for they had judgment who deſigned it; and the chaſte and ſevere taſte that continues each to its own column will always beſt pleaſe the moſt judicious.

In the antique we ſometimes find the three faſciæ of the *Ionic* architrave lean backward, ſo that the ſoffit of their projeſture is not direct, but riſes before; this is very obvious to the curious obſerver in the *Ionic* of the temple of *Fortuna virilis*. But this ſeems a liberty by no means to be followed: it may have had an effect in altering the appearance of the proportions, and probably the old architects did it with that deſign; but in order to follow them the builder muſt have a very perfect knowledge of perſpective, and even with that, the making them what they are intended to appear is better. *Vitruvius* directs that all the faces of the members in entablatures incline forward; it is eaſy to underſtand the deſign of this, that they may have a direction which will a little alter in effect the nature of their proportions, and make them appear plumb; but we find in the antique remains that they oftener incline backwards, and yet the appearance is but little varied. But though *Vitruvius* directs, and the antique authoriſes this, it is better to work by more punctual rules: the giving the proper inclination to take any effect that is deſired, is very abſtruſe and very difficult; and it is certain they are intended to appear plumb, and therefore it is eaſier and better that they ſhould be made ſo.

Thus much of the *Ionic* architrave, its proportions, form, and variations; there remains ſomewhat to be ſaid of the freeze, but that may be comprized in ſo narrow bounds that it need not have a diſtinct chapter.

The meaſure and proportion of this member we have ſhewn ſpeaking of the entablature in general: whether it be made equal to, or greater, or leſſer than the architrave, it may be either left plain, or decorated with ſculpture, for the enriching of
the

Book II. the order, all this is left to the fancy of the architect. The freeze is the seat of ornament; but we shall remind him of the character of the order, which is elegant simplicity, and therefore caution him that if ornaments be added, they be not excessive. In this, as in the division of the faces of the architrave by astragals, let him remember the *Ionic* entablature is to be a medium between the plainness of the *Doric* and the richness of the *Corinthian*.

One thing farther we must mention respecting this freeze, which is, that it is sometimes form'd in a particular manner, not flat as in all the other orders, but rais'd into a roundness like a cushion or a pillow.

The baths of *Dioclesian* give an instance of this freeze in the *Ionic* order; and from this instance, for there is no other in the antique, *Vitruvius* has established it into a rule.

When it is thus made swelling it must be a small segment of a circle; and it is not without a very good effect, though not sufficiently regarded by the present architects.

C H A P. XVII.

Of the IONIC cornice.

THE cornice of the *Ionic* order is exceedingly elegant. Its projecture is moderate, and it is at once beautifully concealed, and finely supported. There is an appearance of weight, and as it were a danger of falling, in the *Doric* cornice; but this is light and must always be look'd upon with ease and satisfaction: as there is nothing extravagant in the projecture, there is nothing harsh or sharp in the mouldings. The square members are few, and consequently there is a look of softness, and they are blended happily, so that all is harmony and regularity.

It is composed of an upright ogee, which terminates it at the top; under this comes a cima reversa, or inverted ogee, and under this the corona; under the corona is the cima of the modillions, then follow the modillions; under these is an ovolo, and under that a cavetto which rests upon the freeze.

Here are round and undulated members, finely disposed, and judiciously varied; and from this results the great beauty.

The proportions of these members, according to *Palladio*, are these.

The whole cornice is divided into seven parts, and three quarters of a seventh. Two of these parts are given to the cavetto and ovolo over the freeze, two to the modillions, and three quarters to the corona and the upright cima.

The projecture of the whole cornice is to be equal to its height

We see *Palladio* counts only seven members in the *Ionic* cornice; *Perrault's* Chap. 17. reckoning is ten, and the usual way of measuring them is by those twentieths of the entablature, of which the whole cornice takes eight.

Instead of the cavetto and ovolo of the lower part, an ogee is made to rest upon the freeze, which has for its height one of the twentieths; over this comes the dentel, which has one and a half. Over these comes a fillet, which has only a fourth of a part in measure; this is followed by an astragal, which has as much; over this rises a quarter round, which has just one part; on this rests the corona, or drip, which is the sixth member, and has one and a half; the depth of the drip under the corona is one third of a part. The seventh member is an ogee, which has half a part in height; the eighth has a quarter only, it is a fillet; the ninth is the cymasium, which has one part and a quarter; and the tenth is the list or fillet, which has half a part.

This admeasurement and division makes a very beautiful and regular *Ionic* cornice, and is supported by the antique.

The proportions of these several parts are to be found by dividing a third of the diameter of the column into fifths; twelve of these fifths go to the whole cornice. The ogee has one taken from the surface of the flat freeze; the denticle has three; the quarter round, with the astragal and fillet under it, four and a half. The corona has eight and a half; the ogee with its fillet nine and a half; and the cymasium twelve.

In order to cut the dentel, the height is to be divided into three parts; two of these are to be given to the denticle, and one to the space between.

The cutting of the dentel is thus directed by *Perrault*, and it has a very happy effect.

Vitruvius makes this very different; he gives but half the height of the dentel for its breadth, and but two thirds of the breadth for the space between: this is making it very narrow. *Barbaro* and *Cataneo* follow *Vitruvius* in this, but *Serlio* and *Vignola* make it larger.

The proportion here assigned is much more beautiful, and is supported by the authority of the antique remains in the theatre of *Marcellus*, the temple of *Jupiter fulminans*, the arch of *Septimius*, and the three columns in the *Campus Vaccinus*.

As *Vitruvius* makes the dentel very narrow, we on the contrary find it in some of the antique remains very large and broad; the width being nearly equal to the height. This we see in the temple of *Fortuna virilis*, in *Nerva's* forum, and in the arch of *Titus*, and that of *Constantine*.

We have proposed to the architect to be careful in studying *Palladio*; that he make himself master of all the knowledge he contains; and we have in general proposed that author as a rule, and his designs as models; but here we have an instance how necessary it is also to go farther. *Palladio* gives modillions in the *Ionic* cornice, but

Book II. *Vitruvius* makes denticles in their place; and we find this so general in the antique, that it may very well be received, for the characteristic of the cornice in this order.

Almost all the authors who have followed *Vitruvius* give these denticles. *Scammozzi* and *Viola* agree with *Palladio* in introducing modillions; they borrow their cornice from the temple of *Concord*, which is an irregular *Ionic* in every respect.

These additions very happily characterise the cornices of the several orders: mutules are peculiar to the *Doric*, dentels to the *Ionic*, and modillions to the *Corinthian*.

It is easy to see that *Scammozzi* had the capital of this singular *Ionic* in his eye when he perfected the faces of the capital in that order; but this was the proper use of such a flight in the antique, as that column and no other: it might give a hint for the adding to the capital, but was by no means sufficient or proper to be the rule of a general order.

It is a very common error to enrich the cornice of the *Ionic* order too much. *Vitruvius* makes it too plain, who allows it no ornament but the dentel: but they exceed on the other side who make it like the *Corinthian* by enriching all its members.

Lions heads are a common ornament to this cornice, and the architect should place them at equal distances in the spaces between the columns. In the temple of *Fortuna virilis* these heads neither answer the perpendicular of the columns, nor the spaces between them: they are thrown on in perfect disorder; but the regular disposition is better.

The obvious character of the *Ionic* cornice is that it has dentels, and that the soffit of the eve is hollow. These distinguish the cornice as palpably as the volutes do the capital.

The ornaments of this cornice we see are simple, but they are finely imagined, and follow with an easy simplicity and happy lightness. There may be reason in declaring it the most perfect of all the cornices: the architects are so sensible of this, that they often take it where they ought to use the *Corinthian*. This is a liberty against which we in general declare, but there may be very reasonable excuses for sometimes taking it.

C H A P. XVIII.

Of the IONIC pedestal.

WE do not begin our accounts of the orders with the pedestal appropriated to each, for this plain reason; because the order is perfect without it. We have observed already, that the use of pedestals is always arbitrary, and often wrong; it is with reason therefore that we throw them to the last part of the account: but as there may be occasions that justify their use, and fancy may often prevail when there are not, and may be justified by authority, it is proper that we lay down the necessary instructions for their form and proportions.

The pedestal of the *Ionic* order consists of a plinth, a base, a die, and a cymasium; the plinth, which rests upon the ground, sustains the die on its base, and the die is crowned with its cornice, cap, or head, called its cymasium.

For the proportion of its members the whole is to be divided into seven parts and a half; the base is to have two of these parts, the cymasium one, and the die or trunk must have the rest.

The base of the pedestal has five mouldings, thus rising in elegance above the *Doric*; which has only three. These are a listel, an inverted ogee, and astragal and fillet, and a cavetto.

This is *Palladio's* base: there is another taken from the *Ionic* of the temple of *Fortuna virilis*, and *Perrault's* differs from this last only in omitting the fillet that is there between the fillet of the upper cymaïse and the cavetto. The members in this part of the pedestal should encrease regularly, according to the delicacy of the order; some put an astragal instead of a fillet between the cima and cavetto.

The die is plain; the members of the cornice are fix: these are a cavetto with its fillet; an astragal, a quarter round and a drip, or hanging square, crowned with a fillet.

For the heights of these mouldings that of the cornice is to be divided into ten parts; two of these are given to the cavetto, and one to its fillet; four to the drip, two to the ogee, and one to its fillet.

This is a very elegant and plain cornice for the pedestal of the *Ionic* order, and therefore appropriated to it. We see ten members in the cornice of this part in the temple of *Fortuna virilis*, which are too many, they make it confused; and *Scammozzi*, and some others, allow it as many as they do to the *Corinthian*, which is extremely wrong.

Book II.

The antients distinguished their orders by all their parts; and this practice should be followed by the skilful architect. Let him consider the general character of the order, and he will find that not only the height of the shaft, and decoration of the capital, form the particular character of this order, but that the same idea of a beautiful simplicity is carried through every part of it; and that is not only a middle order between the *Doric* and *Corinthian* by way of height, but that it is so in ornament; neither arriving at the pomp of one, nor sinking into the perfect plainness of the other: every part that goes to its construction, and every addition to it, should carry the same general turn, and it should advance from plainness to ornament by the same degrees by which it rises in height; and this in every part as well as every member.

C H A P. XIX.

Of the CORINTHIAN order.

WE have seen in the short plain *Doric* the origin of regular architecture; we have traced the rise of ornaments in the *Ionic*, and we are now coming to their perfection in the *Corinthian* order. This was the height at which the *Greeks*, to whom we owe the rudiments of this science, arrived; and perhaps it may be said with truth, that the elegance of order never was, or will be carried farther. The *Composite*, of which we shall speak hereafter, is but the *Ionic* lifted upon the *Corinthian* capital, and what it gains in abundance of ornament it loses in lightness.

The *Corinthian* has at once an air of dignity and beauty; it forms an object that strikes and commands the attention, and never is seen without pleasure as well as admiration. There is a nobleness in its graces, and whatsoever decoration is given to it seems to belong to the order: the great care of the architect must be to proportion the decorations in all the orders to the proper character; and it is in this he may be most lavish. Each order has its character; and elegance is that of the *Corinthian*. The first care in the study of judicious architecture must be to distinguish the properties of the several orders, and to suit their additional decorations to them.

The origin of the *Corinthian* order is attributed to an accident; the *Greeks* had first built with the *Doric*, in which the capital was formed only of mouldings; from this they had advanced to the *Ionic*, on which were volutes, and the column they had made taller; after this, as they grew more licentious and luxurious in their desires of decoration and elegance, this chance gave the hint for a new order.

A basket had been set upon the ground, and covered with a square tile; there grew near it a plant of acanthus, or bear's-breech; the leaves shot up and covered the outer surface of the basket, and as the stalks rose among them, they soon reached the tile which over-hung the edges of the basket at the top; this stopping their course upwards, they curled and twisted themselves into a kind of volutes.

In

In this condition a sculptor, *Callimachus*, saw it; the twisted part of the stalk re-
presented to him the volutes of the *Ionic* capital, which as they were here smaller and Chap. 19.
more numerous, appeared in a new form; he saw the beauty of raising them among
leaves, and was struck with the representation of a lofty and noble capital.

The thought was put into execution, and formed what all the world has since ad-
mired.

The basket in this case was the vase or bell of the capital, the tile the abacus, and
the leaves and stalks cut in stone were the great characters of the order.

The use of the *Corinthian* is in great and elegant buildings, and it never is seen
to so much advantage as when it makes the second or third row of columns in mag-
nificent structures; any of the massy orders may be placed under it, but the *Ionic* is the
most proper, for the progression is most beautiful where least violent: and the *Com-
posite* may be placed over it. But in very few buildings more than three orders are
required, and then this should be the uppermost.

Vitruvius makes the distinction of the *Ionic* order from the *Corinthian* consist in the
capital alone; according to him the *Corinthian* is only the new invented capital plac'd
upon the *Ionic* column, but it is best to distinguish them entirely; and this is done ve-
ry happily by the other parts.

The *Corinthian* has its proper base, and the height of the shaft differs; there are al-
so ornaments on the architrave and cornice that are peculiar: these we find in many
antient buildings.

A COMPLETE BODY

C H A P. XX.

Of the CORINTHIAN base.

VITRUVIUS gave the same base to the *Ionic* and *Corinthian*; but those architects who followed him invented a new and proper base for this order. Indeed invention is too honourable a term, for it has nothing new in its character, though it is made to differ from the others; it is a kind of composition of the *Attic* and *Ionic* base, and is neither so perfect as the former, nor so faulty as the latter.

The *Corinthian* base is the *Ionic* augmented by a large torus placed immediately upon the plinth; this gives it somewhat of the appearance and character of the *Attic*, but there is too much work between the two torus's; and it takes off that great absurdity of the *Ionic* base, which is its diminishing downward. Indeed one would think this the original, and that the *Ionic* had been made by cutting off the under torus.

The *Ionic* looks as if it were in danger of breaking off at the bottom, and the *Corinthian* as if that danger were in a part a little higher; this is all the difference. Solidity and firmness should be the characteristics of a base, and these want them even in appearance.

It is true that the *Corinthian* column, being the most elegant of the three, should have a lighter base; but this is too light; it is too delicate.

The mouldings are too nice and too tender, they are in danger of continual injuries; and this should not be, for a base is in the way of accidents. Those who invented this considered that the order was generally placed upon some other, so that its height preserved it; but they should have remembered that it sometimes is set upon the pavement. Probably this base was invented for it when in the upper range of some great structure, and those who afterwards placed it lower did not consider the intention of the first author. Let the architect who shall study upon our plan remember it: let him recollect that the *Corinthian* order gives him the choice of two bases, and use them occasionally according to the circumstance. When it is placed upon the ground let him use the *Attic* base, and when it is raised over another order let him take its own; for larger columns the *Attic* base is properest, and the right *Corinthian* for smaller; all this depends upon the same principle, the *Attic* is strong, the other light.

The *Corinthian* base consists of a large under torus, a smaller upper torus, and astragals and cavetto between them; these rest upon the plinth. The astragals are two, and there is a cavetto between them.

We find a great deal of diversity in the proportions of this base and its members, Chap. 21. both in the remains of antient buildings, and in the writings which establish rules for practice. We shall therefore take the medium.

The height of the whole base, with its plinth, must be a semi-diameter of the column.

This proportion is supported by many examples from the antique; but there do not want variations here as in other parts: we see in some remains the upper scotia of this base smaller than the under, but the present architects, and most of the writers on the subject, make them equal. They are also much better in their effect when they are thus without difference.

C H A P. XXI.

Of the shaft of the CORINTHIAN order.

THERE is a great deal of diversity in respect of the height of the entire order in the *Corinthian* among antient remains. In the portico of the *Pantheon* it is nineteen semi-diameters and six minutes; in the temple of *Vesta* it is nineteen and nine minutes; in the temple of the *Sibyl* it is sixteen semi-diameters and sixteen minutes; in the temple of *Peace* it is nineteen and two minutes; in the three columns in the *Campus Vaccinus* it is twenty semi-diameters and six minutes; in the temple of *Faustina* it is just nineteen; and in the *Basilic of Antoninus* it is just twenty; in the porch of *Septimius* it is nineteen and eight minutes; and in the arch of *Constantine* seventeen and seven minutes; and finally, in the *Coliseum* seventeen and seventeen minutes: Here we see a vast variation; the architect should know how far he may wander on either side of a medium, without being beyond the sanction of authority; but at the same time he should know what the mean is.

Among authors we find the same kind of variation, though in a less degree. *Vitruvius* makes the height nineteen semi-diameters, that is, nine diameters and a half, taking for his example the temple of *Faustina*; *Serlio* makes it eighteen, that is just nine diameters: this is a measure supported by no particular authority, but the effect of his fancy. *Palladio*, taking for his guide either his great master *Vitruvius*, or the temple of *Faustina*, as he had, makes the height nine diameters and a half.

If we take a mean measure among all this variation, it gives the height at eighteen semi-diameters and two thirds: this, though it seems a broken measure, yet may, by a different admeasurement, be made an equal one; it is just twenty-eight thirds of the diameter of the column. This is the measure *Perrault* calls a little module, and it gives a very regular progression in height in the columns, according to their several orders; the *Doric* at a mean being in height four and twenty of these thirds, the *Ionic* six and twenty, and the *Corinthian*, as we have seen, eight and twenty; and if we take into the account the two additional orders to be spoken of afterwards, the progression

being the same, the *Tuscan* has twenty-two of these thirds of the diameter in height, which is two less than the *Doric*, and the *Composite* has thirty, which is two more than the *Corinthian*.

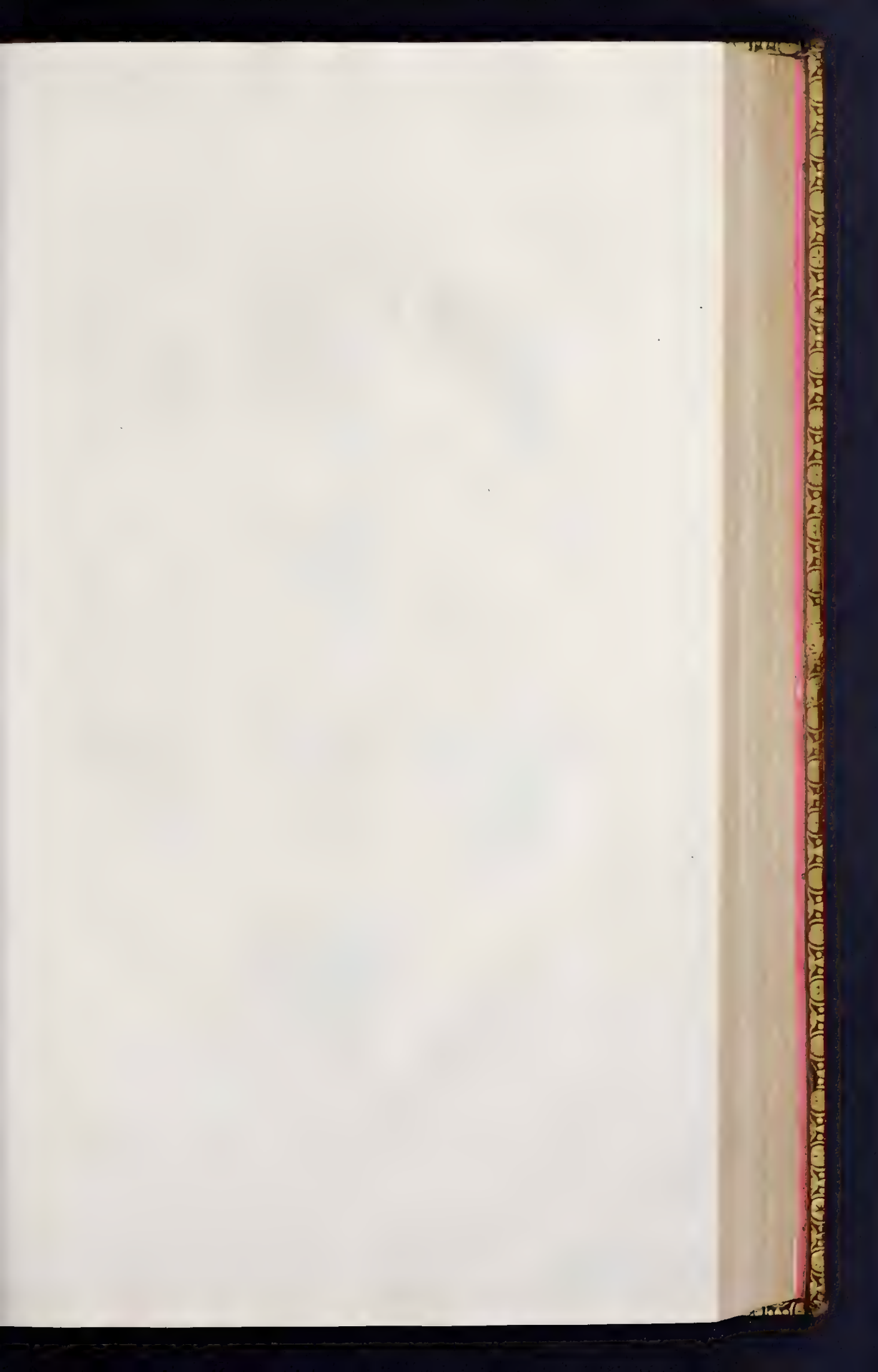
The *Corinthian* column has a listel and astragal at the bottom where it rests upon the base, and the same at the top. The capital rises from this astragal.

In the diminution of the *Corinthian* column, we find a great variation according to the pleasure of the architects who built those structures, from the remains of which we draw all our rules; in the temple of the *Sibyl* we have *Corinthian* columns but nineteen foot in height, and their diminution is eight minutes: and in the columns of the *Campus Vaccinus*, which are seven and thirty foot high, the diminution is only six minutes and a half. At a medium we may set down the diminution here as in the other orders at two fifteenths of the diameter of the column.

The proper intercolumniation for this order is two diameters of the column. Having thus spoke of the height of the entire order, we come to the height of the shaft alone which is the proper subject of this chapter. The height of this is less than that of the *Ionic* shaft, and that for a very plain reason; the orders are to proceed gradually, and regularly rising in height, and the rise must be in the entire column, not in its shaft alone: now the capital of the *Corinthian* is so high, that if the shaft had not been reduced, the augmentation must have been too great from the *Ionic* to this order.

The *Corinthian* shaft is often fluted, and it is a practice much better suited to this than to the other more massy orders. The number of flutings must be twenty-four in this order, and they must be made half as deep as they are broad; the spaces between must be one third of the breadth of the fluting: this is the proportion of *Palladio*. As there is a lightness communicated to the column by this practice, we shall give the architect this advice in the use of it, that it is best for columns removed from the ground; and that when the column is fluted, it will be proper to use its regular and appropriated base, for that has also an air of lightness and delicacy.

Perhaps it may be allowed a very good general rule that the column should be plain, and have the *Attick* base when it is on the ground, and that it should be fluted, and have its proper base, when it is raised upon another order.



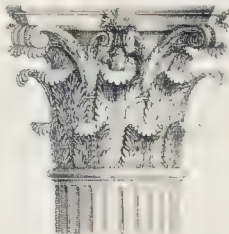
CORINTHIAN CAPITALS.

Pl. 23.

Temple of VESTA at ROME.



BASILIC of ANTONINE.



A. PALLADIO.



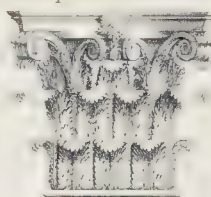
TEMPLE of VESTA at TIVOLI.



PORTICO of SEPTIMIUS SEVERUS.



Frontispiece of NERO at ROME.



MARS ULTOR at ROME.



CAMPUS VACCINUS.



Scale bar with markings for 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100, 101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122, 123, 124, 125, 126, 127, 128, 129, 130, 131, 132, 133, 134, 135, 136, 137, 138, 139, 140, 141, 142, 143, 144, 145, 146, 147, 148, 149, 150, 151, 152, 153, 154, 155, 156, 157, 158, 159, 160, 161, 162, 163, 164, 165, 166, 167, 168, 169, 170, 171, 172, 173, 174, 175, 176, 177, 178, 179, 180, 181, 182, 183, 184, 185, 186, 187, 188, 189, 190, 191, 192, 193, 194, 195, 196, 197, 198, 199, 200, 201, 202, 203, 204, 205, 206, 207, 208, 209, 210, 211, 212, 213, 214, 215, 216, 217, 218, 219, 220, 221, 222, 223, 224, 225, 226, 227, 228, 229, 230, 231, 232, 233, 234, 235, 236, 237, 238, 239, 240, 241, 242, 243, 244, 245, 246, 247, 248, 249, 250, 251, 252, 253, 254, 255, 256, 257, 258, 259, 260, 261, 262, 263, 264, 265, 266, 267, 268, 269, 270, 271, 272, 273, 274, 275, 276, 277, 278, 279, 280, 281, 282, 283, 284, 285, 286, 287, 288, 289, 290, 291, 292, 293, 294, 295, 296, 297, 298, 299, 300, 301, 302, 303, 304, 305, 306, 307, 308, 309, 310, 311, 312, 313, 314, 315, 316, 317, 318, 319, 320, 321, 322, 323, 324, 325, 326, 327, 328, 329, 330, 331, 332, 333, 334, 335, 336, 337, 338, 339, 340, 341, 342, 343, 344, 345, 346, 347, 348, 349, 350, 351, 352, 353, 354, 355, 356, 357, 358, 359, 360, 361, 362, 363, 364, 365, 366, 367, 368, 369, 370, 371, 372, 373, 374, 375, 376, 377, 378, 379, 380, 381, 382, 383, 384, 385, 386, 387, 388, 389, 390, 391, 392, 393, 394, 395, 396, 397, 398, 399, 400, 401, 402, 403, 404, 405, 406, 407, 408, 409, 410, 411, 412, 413, 414, 415, 416, 417, 418, 419, 420, 421, 422, 423, 424, 425, 426, 427, 428, 429, 430, 431, 432, 433, 434, 435, 436, 437, 438, 439, 440, 441, 442, 443, 444, 445, 446, 447, 448, 449, 450, 451, 452, 453, 454, 455, 456, 457, 458, 459, 460, 461, 462, 463, 464, 465, 466, 467, 468, 469, 470, 471, 472, 473, 474, 475, 476, 477, 478, 479, 480, 481, 482, 483, 484, 485, 486, 487, 488, 489, 490, 491, 492, 493, 494, 495, 496, 497, 498, 499, 500, 501, 502, 503, 504, 505, 506, 507, 508, 509, 510, 511, 512, 513, 514, 515, 516, 517, 518, 519, 520, 521, 522, 523, 524, 525, 526, 527, 528, 529, 530, 531, 532, 533, 534, 535, 536, 537, 538, 539, 540, 541, 542, 543, 544, 545, 546, 547, 548, 549, 550, 551, 552, 553, 554, 555, 556, 557, 558, 559, 560, 561, 562, 563, 564, 565, 566, 567, 568, 569, 570, 571, 572, 573, 574, 575, 576, 577, 578, 579, 580, 581, 582, 583, 584, 585, 586, 587, 588, 589, 590, 591, 592, 593, 594, 595, 596, 597, 598, 599, 600, 601, 602, 603, 604, 605, 606, 607, 608, 609, 610, 611, 612, 613, 614, 615, 616, 617, 618, 619, 620, 621, 622, 623, 624, 625, 626, 627, 628, 629, 630, 631, 632, 633, 634, 635, 636, 637, 638, 639, 640, 641, 642, 643, 644, 645, 646, 647, 648, 649, 650, 651, 652, 653, 654, 655, 656, 657, 658, 659, 660, 661, 662, 663, 664, 665, 666, 667, 668, 669, 670, 671, 672, 673, 674, 675, 676, 677, 678, 679, 680, 681, 682, 683, 684, 685, 686, 687, 688, 689, 690, 691, 692, 693, 694, 695, 696, 697, 698, 699, 700, 701, 702, 703, 704, 705, 706, 707, 708, 709, 710, 711, 712, 713, 714, 715, 716, 717, 718, 719, 720, 721, 722, 723, 724, 725, 726, 727, 728, 729, 730, 731, 732, 733, 734, 735, 736, 737, 738, 739, 740, 741, 742, 743, 744, 745, 746, 747, 748, 749, 750, 751, 752, 753, 754, 755, 756, 757, 758, 759, 760, 761, 762, 763, 764, 765, 766, 767, 768, 769, 770, 771, 772, 773, 774, 775, 776, 777, 778, 779, 780, 781, 782, 783, 784, 785, 786, 787, 788, 789, 790, 791, 792, 793, 794, 795, 796, 797, 798, 799, 800, 801, 802, 803, 804, 805, 806, 807, 808, 809, 810, 811, 812, 813, 814, 815, 816, 817, 818, 819, 820, 821, 822, 823, 824, 825, 826, 827, 828, 829, 830, 831, 832, 833, 834, 835, 836, 837, 838, 839, 840, 841, 842, 843, 844, 845, 846, 847, 848, 849, 850, 851, 852, 853, 854, 855, 856, 857, 858, 859, 860, 861, 862, 863, 864, 865, 866, 867, 868, 869, 870, 871, 872, 873, 874, 875, 876, 877, 878, 879, 880, 881, 882, 883, 884, 885, 886, 887, 888, 889, 890, 891, 892, 893, 894, 895, 896, 897, 898, 899, 900, 901, 902, 903, 904, 905, 906, 907, 908, 909, 910, 911, 912, 913, 914, 915, 916, 917, 918, 919, 920, 921, 922, 923, 924, 925, 926, 927, 928, 929, 930, 931, 932, 933, 934, 935, 936, 937, 938, 939, 940, 941, 942, 943, 944, 945, 946, 947, 948, 949, 950, 951, 952, 953, 954, 955, 956, 957, 958, 959, 960, 961, 962, 963, 964, 965, 966, 967, 968, 969, 970, 971, 972, 973, 974, 975, 976, 977, 978, 979, 980, 981, 982, 983, 984, 985, 986, 987, 988, 989, 990, 991, 992, 993, 994, 995, 996, 997, 998, 999, 1000.

C H A P. XXII.

Of the CORINTHIAN capital.

THE capital is the part that gave rise to the idea of the *Corinthian* order, and is the great article of its distinction. It is this that gives the air of dignity and richness to the order. We have seen that the shaft is reduced to make way for its height, and it makes ample amends by its richness.

It is a rounded vase, covered with an elegant abacus, and surrounded with two rows of leaves; these are selected from among the most beautiful in the vegetable creation, and their bending gives an easy and fine projection. From among these leaves rise stalks which terminate at top in a kind of little volutes at the corners and in the centers of the abacus. The vase serves as a field, upon which the foliage is beautifully disposed, and the leaves have a projection that increases gradually, and they give room for all the genius of the sculptor in the raffling. The stalks rise naturally, and their rounding at the extremities is natural and elegant; there is in the whole of this capital a most happy softness joined to consummate richness: there is variety equal to the grace. The leaves are very happily chosen, for they swell and divide so finely in the plant that they are a perfect model for the sculptor, and they give a swelling out-line to the capital which *Palladio* so happily displays in his figures; and which most of the other writers have neither felt nor communicated. In them all is strait, in him there is a swelling at the bottom of the lower tier of leaves, which takes off the harshness, and very perfectly agrees with the flowing grace which is so finely displayed in the rest of the capital.

The whole capital differs extremely from the others; the abacus is a decorated part, and altogether unlike that of the plainer orders: this is its termination at top, and at the bottom it has no ovolo, but rises immediately from the astragal, which is a part of the shaft. The other capitals are added to the tops of the shafts, but this seems to grow out of the column, and there is in that an air of great and particular beauty. The rise of the leaves make what may be called the neck of the column; and from this rise the stalks which support the volutes. These have only a faint external resemblance of the *Ionic*, not a real similarity. The height of the entire capital is to be a diameter and one sixth of the column; this sixth part is allowed to the abacus; so that the foliage and volutes are just a diameter high, measuring, as in all other respects, from the bottom of the column.

This height is to be divided into three equal parts, and of these one is given to the first row of leaves, another to the second, and the other third to the remainder. This third is to be divided into two, and the upper half is to be the measure of the volutes, and the other of the leaves that support them, and from which they seem to grow. The stalks which support them must be somewhat thick at their lower parts, and diminish as they rise.

Book II.

The vase, tympane, or bell, which is the inner part of the capital, must be direct to the bottom of the flutings of the column, when fluted.

These are the proportions of the capital, according to *Palladio*: we see it consists of four parts beside the abacus; these are a first row of leaves, a second row, the leaves covering the stalks that support the volutes, and the volutes; and the construction is easy because these are all equal.

Over these volutes lies the abacus, which far from a plain, is an ornamented member; its four faces are hollowed inward circularly, and in the centre of each there is placed a rose or other flower.

For the construction of the abacus, and its due projecture *Palladio* gives the following rules:

Make a square, each side of which is to be the module and half of the column: let diagonal lines be drawn in this from corner to corner, and where they intersect one another the fixed foot of a pair of compasses must be placed. This is the centre of the square. Then a model must be marked toward each angle of the square: where the points are, the lines must be drawn; and these will intersect the diagonals at right angles, and they will touch the sides of the square. Words do not so well convey this, but it is very easily comprehended by the figure *Plate XXIII*; these lines are to be the bounds of the projecture, and as much as the length is, so much is to be the breadth of the horns of the abacus.

For the hollowing of the abacus a thread is to be laid from one point or horn to the other; and then from these points are to be drawn two segments of circles: one foot of the compasses is then to be set at the intersection, and the other is to be struck, in order to describe the arch which will make the curvature: this is so made that the points of the leaves touch it, and this gives their projecture. The rose or flower in the centre of each face is to be of the fourth part of the diameter of the column above.

These are the proportions given by *Palladio*.

The capital may be formed also thus: let the whole height be divided into seven parts; and for the leaves take the four lowest parts of the seven, two for each row. The height of each leaf is then to be parted into three, and the upper part is to be given to the descent the head of each leaf makes at the turn. The three remaining parts are for the stalks, the volutes, and the abacus: this quantity is to be divided now into seven parts, of which two are to be given at top to the abacus, three others to the volutes, and the two that remain to the stalks, which at that distance meet the leaves. One of these two parts is for the bending down of the leaves, of the stems of which two meet and join where the volutes meet, which is at the four corners and centres.

Under the horns of the abacus, where the volutes meet, there is to be a small leaf of the acanthus: and this turns back toward the corner of the abacus, to fill the space between the volute which descends, and the horn of the abacus which remains strait.

The

The proper leaves of the *Corinthian* capital are divided into several parts; there are three ranges of parts, or as it were smaller leaves, two on the opposite sides in each range, and the single middle one running up between them: so that the whole is composed as it were of seven parts, a long one and six shorter; this long one, which runs up in the middle, bends back at the point, and projects outwards.

These lesser leaves, of which there are three ranges, are raffled and divided in different manners. When each is cut into five they are called olive leaves, but very improperly; the whole or entire leaf does not in this case carry the least resemblance of the olive leaf, and if every part or division of which these smaller portions are composed, should be imagined to resemble at all a leaf of the olive, the manner of the growth is altogether unlike.

When each of these smaller leaves, of which there are three ranges, is subdivided into three, instead of five, the capital is said to be composed of laurel leaves; there are of this kind in the temple of *Vesta*, at *Rome*: the middle portion of the leaf, bows its head forwards, and its parts are convex outward, whereas the others are somewhat hollow.

Above the leaves in the middle there is a flower; this rises from among the leaves, and the stalk is buried between the volutes in the centre, but the flower appears in the midst of the abacus: this is called the rose of the *Corinthian* capital, but it often represents some other kind.

The plan of the capital may be also thus made: let a square be drawn equal to the plinth of the base; make an equilateral triangle with one side of the square for its base; the angle opposite to this base is the centre on which to describe the sweep of the abacus. The cutting off the horns of the abacus divides one of the sides of the square into ten parts; one of these is the breadth of the horn on the cant, which must be at right angles to the diagonal of the square.

We meet with a great deal of variation in the proportions of this capital in the antique; and from this has arisen a great deal of diversity among the rules of writers, founded on those remains.

In the temple of the *Sibyl* at *Tivoli* the whole capital, including the abacus, is but one diameter of the column in height; this is a seventh less than *Palladio* gives it, but *Vitruvius* seems to have taken his rule from it. On the contrary, in the temple of *Vesta* at *Rome*, and in *Nero's* frontispiece, it is higher than the allowed proportion, being a diameter and two sixths; in the upper order of the *Coliseum*, and in the temple of *Jupiter fulminans*, it is a diameter and one sixth.

Sometimes it is a little higher than this, as in the temple of *Mars the Revenger*; and sometimes a little lower, as in the baths of *Dioclesian*.

Bullant, *Alberti*, *Cataneo*, *Barbaro*, and *Serlio*, make it low, like *Vitruvius*, but the rest of the writers give it the height of a diameter and one sixth, like *Palladio*.

Book II. *Vitruvius* makes the abacus a seventh part of the capital; and so it is in the temple of *Faustina*, and the three columns in the *Campus Vaccinus*; in the *Pantheon* it is but an eighth, as also in the *Basilic of Antonine*; in the temple of *Vesta* at *Rome*, and that of the *Sibyl* at *Tivoli*, it is considerably greater.

The form and figure of the leaves has also a vast variation; in the temple of the *Sibyl* at *Tivoli* they are the true acanthus, and *Vitruvius* cut them in the same manner; in many very antique remains they are what are called olive leaves, cut into fives; in the temple of *Mars Ultor*, they are cut only into four. *Serlio*, *Barbaro*, and *Cataneo* make them like the original acanthus, the others vary. We have observed that the two rows of leaves should be of a height; but in the antique we sometimes see the under-row the tallest, as in the temple of *Vesta* at *Rome*, and a multitude of other examples: on the contrary, in the *Basilic of Antonine* the upper range is tallest. In the three columns in the *Campus Vaccinus*, in the temple of *Jupiter fulminans*, *Mars Ultor*, and many others, they are equal, and, upon a fair examination, this seems the happiest proportion.

In the *Pantheon* the ribs in the middle of the leaves are ruffled on both sides, and sometimes they are not cut at all; of each practice also there are many other instances. We have before observed the swelling or bellying out of these leaves; the first row has this more than the other, and principally at bottom. This swelling is very great in the temple of *Vesta* at *Rome*; there is something remarkable also in the swelling and number of the leaves in the *Corinthian* pilasters in the frontispiece of *Nero* and baths of *Dioclesian*; there are three leaves in the first row, and four in the second, and they swell very considerably: commonly there are only two leaves in the first, and three in the second row, in pilasters.

There is a dispute about the propriety of cutting off the corners of the abacus in this order. *Vitruvius* does not direct it; and in the temple of *Vesta* at *Rome* they are sharp: they are eight when cut, but *Vitruvius* calls them four; he therefore certainly meant they should be left entire.

In the flower in the centre of each face of the abacus there is also a very great variation; it is called a rose in general, but it is often something very different from any flower of that kind.

In size it varies extremely; *Vitruvius* allows it the thickness of the abacus, and nothing more: some make it drop as low at the upper part of the vase of the capital; and in the temple of the *Sibyl* at *Tivoli* it is much larger, almost covering the middle volutes; and in this extreme proportion it has a very beautiful appearance.

In form it is commonly composed of six leaves, each ruffled into five parts, from the centre of which rises a pointal, such as is usual in the centre of most flowers. It is an imputation upon the taste and judgment of the sculptors, that they have made this represent a fish's tail: there is nothing of this kind in nature, but we see it thus in the *Pantheon*, and the temple of *Jupiter fulminans*, and many other remains. In the temple of *Vesta* it is made to resemble an ear of corn; and there is the same sort of central

part in the flower at the temple of the *Sibyl*, which is large, and has the leaves undivided. In the *Basilic of Antonine* the bottom of the rose is turned upward, and has an ear of corn in the middle; in the three columns of the *Campus Vaccinus* the rose has the acanthus leaves, it hangs downward, and has a pomegranate in the midst, hanging also downward.

Sometimes the antients varied even the character in this ornament; for in the porch of *Septimius*, instead of a flower, there is, in the centre of each face of the abacus, an eagle holding a thunderbolt.

Upon the whole, nature is the best guide in all these cases; the acanthus leaf was that originally used in the capital of this order, and it is much more beautiful than any that has been introduced by fancy, or caprice, in its place; the sculptor will therefore do well to keep to it. The roundings and curvatures intended in this capital are much more happily supplied by the real acanthus leaf than any other; and its own stalks furnish the branches and volutes. Any deviation from this is a corrupting of the original thought, which was one of the most happy that ever occurred to man. The substituting the laurel division, as it is called, is better than the olive, because it is something larger; but the keeping the original acanthus is vastly best. The flower of the abacus has very different projectures in different works of the antique; sometimes it extends beyond the line that goes from one horn of the abacus to the other; we see it with this projecture in the three columns in the *Campus Vaccinus*, and in the *Basilic of Antonine*; and sometimes it is within the line, as in the temple of *Jupiter fulminans*, and of *Mars Ultor*; and in some other examples its projecture is the same with that of the line, as in the temple of *Faustina*.

In the temples of *Jupiter fulminans*, and *Mars Ultor*, the volutes are joined one to another; and, on the other hand, in the temple of *Vesta*, and the frontispiece of *Nero*, we see them wholly separate.

The helix of the volute is also form'd in two manners in the antique; sometimes it is kept twisting quite to the end in the same course, like the shell of a snail; and sometimes it turns back again toward the centre, and forms a crooked line like the letter S. We see an instance of the first in the baths of *Dioclesian*, and also in the temple of *Vesta* at *Tivoli*, and some other places; and of the second in the columns of the *Campus Vaccinus*.

The volutes of the last-named columns are very particular; those in the middle, instead of joining at the edge as usual, are interwoven as it were; that which passes over the other being continued under it again. These, and a number of other variations, in every article regarding the several orders, shew, that the architects who established the science by their works were much more free than they who laid down rules in their writings: but they were free with judgment, and knew the indulgencies of fancy had their limits.

Of the entablature of the CORINTHIAN column entire.

THE entablature is, like the other parts, very pompously decorated in this order. It much resembles that of the *Ionic* in its general form and composition, but there is a vast multiplicity of ornaments added; we have had occasion to observe before, that ornament is one thing, and true beauty another; it is exemplified here: for the *Ionic*, which is the foundation of this entablature, is very much superior to it, tho' much plainer. There is a chastity of manner in it which gives a vast grace; and its delicacy is conspicuous, because not buried with decorations.

The multiplicity of ornaments is not all that is to be objected to this entablature; the cornice, which is a very material part in every order, is in itself very defective in this, compared to that we have described for the other.

Having thus far censured the high-finished entablature of the *Corinthian*, it is fit we mention its excellencies, which are much greater than its defects.

The parts will be separately considered in the succeeding chapters, but here it may not be improper to observe in general, that the architrave is the most beautiful and perfect of that of any order; that from its lowest face to the cornice the decorations rise gradually; and that their redundant multiplicity is somewhat softened by this elegant and judicious disposition. The very cornice, which we have so much objected against, is composed of parts beautifully disposed, and would be excellent, were it not for the too vast projection; the platfoud of the eve is almost as heavy as that of the *Doric*: a strange oversight in those who set out in this to give an order lighter than the *Ionic*. Let the architect who has spirit to attempt innovations keep this caution in his mind, that every part must correspond with the whole: he will not so well escape with an oversight as those who invented the *Corinthian* order; for he will not bury the error under so many beauties.

With respect to the height of the whole entablature, *Palladio* lays it down at a fifth part of the height of the column, and the division he makes by twelve, as in the *Ionic*; but in this order he divides the cornice into eight parts; of this we shall treat more particularly when we consider the cornice separate.

The whole may be thus constructed: the entablature being divided into twenty parts, six are to be given to the architrave, six to the freeze, and eight to the cornice, but this, though a very regular is not an universal method. Some pieces in the antique depart from it, and some authors among the moderns order different proportions.

Serlio and *Bullant* make the freeze greater than the architrave; and so we find it in the temple of *Jupiter fulminans*, and in that of the *Sibyl* at *Tivoli*; on the other hand, *Palladio*, *Scamozzi*, *Cataneo*, and *Viola* make the architrave larger than the freeze,

CORINTHIAN ENTABLATURES.

Pl. 24.

A: Palladio.

Jupiter Fulminans.

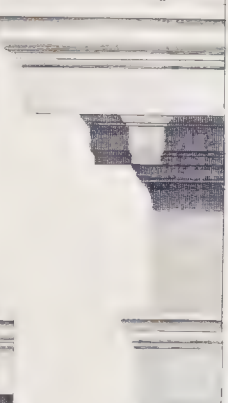
Inside of the PANTHEON



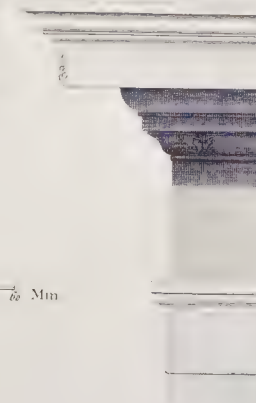
COLISEUM

Basilic of Antonine

NEROS Frontispiece



Temple of FAUSTINA.



10 15 30 40 50 60 Min

Boyer sculp.



and they are supported in this by examples of the antient works in the temple of *Faustina*, and the arch of *Constantine*. Within the *Pantheon*, the architrave and frieze are equal : and, on comparison this seems the most beautiful proportion. Chap. 24.

Having thus given a general idea of the *Corinthian* entablature, we shall now consider it in its separate parts.

C H A P. XXIV.

Of the CORINTHIAN architrave and frieze.

THE *Corinthian* architrave is composed of three faces, as the *Ionic*, and in the same manner they are of unequal height ; this gives them a beautiful variety, and it is on them the ornaments of the entablature begin, rising from the lowest to the highest, and so upwards in the other parts of the entablature ; but too hastily.

The whole architrave consists of six parts, and beginning from the top, they are these : the uppermost is an ogee with its fillet, under this comes an astragal, and under this the upper face of the architrave ; then comes a small astragal cut in beads, and then the second face, and under this a lesser astragal and the lowest face. Counting from the column therefore, there is first a small face terminated by a little astragal, then a larger face terminated by another, and then a third, which is largest, over which stands an astragal, and a large ogee with its fillet ; and on this rests the frieze.

To find the proportions of these several members, let each of these six parts be divided into three, the whole division so amounting to eighteen. The ogee above is to have three of these, its fillet having one and a quarter, and the large astragal which comes under that has one part ; five parts are given to the upper face, and one and a half to the small ogee that comes under it. The middle face is to have four parts, and the lower three ; and half a part is to be allowed to the little astragal that separates them.

To determine the projectures, we are to give first that of the whole architrave, which is two fifths of a third of the diameter of the column. The upper face has one of these fifths, the middle face half a one, and the lower face answers the surface of the upper part of the column.

In laying down these proportions we have taken, at a medium, what is to be learned from the remains of the antients, and the writings of the moderns : and having thus laid down a middle measure, it is fit we shew the student how far practice among the antients, and opinion among the moderns, have on one side or other separated from it.

We have allowed the greater ogee one sixth of the whole architrave ; but we find it allowed a fifth in the portico of the *Pantheon*, and something more than this in the baths of *Dioclesian*, and the temple of *Jupiter fulminans* : but, on the contrary, in the three columns in the *Campus Vaccinus*, and in the temple of *Mars Ultor*, it has only a seventh part. In all these proportions, though very various, the ogee, as well as the whole

Book II. whole architrave, appear very beautiful; so that it would be hard where to give the preference, nor is any determination so proper as taking the medium.

When we have seen this diversity of proportion in these pieces of the antique, we shall easily understand the practice of the modern writers. *Palladio*, *Vignola*, *Alberti*, and *De L'Orme*, allow this ogee more than a fifth; and *Serlio* and *Bullant* limit it to a seventh: *Palladio* took the *Pantheon*, and *De L'Orme* the columns of the *Campus Vaccinus* for his pattern; that is all. Both proportions are beautiful, both authorized by rule, and by the antique remains: the architect may therefore take either of these, or the medium between, or any other proportion from one extreme to the other. Any thing between a fifth and a seventh is justifiable, nor is there any measure between them that will be destitute of beauty. It is thus of the others; we have delivered a middle measure, on either side of which the architect may indulge his genius with variation; for the antients, who are his oracles, have done the same.

These variations in proportion are not all we meet with in the antique remains, for there is a great deal of diversity even in the construction of the architrave in this order. In the temple of *Peace*, and in *Nero's* frontispiece, we see an architrave to the *Corinthian*, which, instead of an ogee to terminate it above, has a quarter round, and over it a cavetto: this is singular, but it is inferior to the ogee, which, in this part of the *Corinthian* architrave has very great elegance. There is a softness in it which is not in the opposition of the quarter round and cavetto, though both round members.

In the temple of the *Sibyl* there is an ogee under a cavetto for this termination; so that one may say the upper ogee of the architrave is here reduced, and a cavetto is set over it.

Scamozzi seems to have been vastly pleased with this variation; for, instead of looking upon it as such, he has established it as the proper and regular construction in this part of the order.

The decorated architrave we have given as the proper one for the *Corinthian* order is not universal; we find, among the antique works, such as are plain, and have no ornament or member under the ogee, or between the faces. We have instances of this in the *Coliseum*, and the arch of *Constantine*.

In others there are only astragals, and no small ogee; this we see in the temple of *Mars Ultor*.

But we have yet a more singular observation than this to come: there are *Corinthian* architraves that have only two faces; we see these in the frontispiece of *Nero*, and in the *Basilic of Antonine*.

In some we see the middle face of the architrave used as a freeze for the reception of ornaments; we have a very singular instance of this in the three columns in the *Campus Vaccinus*. This is a liberty we would by no means advise the young architect to think of following: the fault of the *Corinthian* entablature is that it is too full of ornaments.

OF ARCHITECTURE.

naments ; this therefore adds to the fault, for it is multiplying them yet more. T Chap. 2.
 beauty of this entablature is, that the decorations rise gradually one upon another ; but here that disposition is utterly broken in upon, and the members, whose comparative plainness is their proper merit, are crowded, let us say loaded with ornament. The whole entablature in the *Corinthian* column last named has a beautiful effect, but still it is the worse for this accumulation of ornaments ; they were people who had the art of making their errors pass, by the beauties with which they were surrounded, but still it would have been better if all had been beauty, and those faults, excellently as they are concealed, had been altogether omitted.

The freeze of the *Corinthian* entablature has nothing singular in it, except that we find some instances in the antique, in which it does not rise square above the architrave, but is joined by a little sweep. The baths of *Dioclesian*, and the temple of *Jupiter fulminans*, give us proofs of this ; and *Palladio* and *Scammozzi* have established this into a rule for practice ; we must be so free however to differ from these great men in this point. Upon an examination of the antique in its full compass, we find this practice very rare ; the plain and natural manner is that generally followed, and certainly what is thus established into a rule, was no other than one of those variations from rule, into which we have shewn that the antients, in many instances, gave very freely.

There is a great deal to be said against this practice ; the joint which falls between the freeze and the architrave, when those parts meet square, when they are joined by this sweep, must be in the midst of the freeze, which has a very bad effect.

The freeze in this order may be left plain, or it serves as a field for decoration. There is no order in which ornaments are so proper ; and there is no place in the entire column in which those ornaments fall better : they are out of their place when they bury the middle face of the architrave, but here we in a manner expect them,

Of the CORINTHIAN cornice.

THE *Corinthian cornice* consists of thirteen members; we shall therefore present you a detail of what they are, and their proportions: these being delivered together, we shall treat of their projectures separately.

Let the whole cornice be divided into ten parts; and out of these are to be made the thirteen members of which it is to consist.

The first member is an ogee, this is to have one of the ten parts; the fillet of this ogee is the second member, and that is to have the fourth of a part. The third member is a dentel, this has a part and a half; the fillet and astragal over the dentel are the fourth and fifth members, and the proportion for these is one quarter of a part to each. The sixth member is an echinus, or quarter round, and this has one part; the seventh member is the modillion, and this has two parts; there is an ogee for the crowning of the modillion, this has half a part, and is counted as the eighth member. The corona is the ninth member and has one part; the tenth member has a small ogee crowning the drip, and this has half a part; the eleventh is a fillet, it has a quarter of a part. The great cimaïse has one part and a quarter, and is the twelfth member of the cornice; and the thirteenth is the fillet, and its proportion is half a part.

This is the entire cornice.

To determine the projectures, take a third of the diameter of the column, and divide it into fifths; the great ogee at the bottom has one fifth taken from the naked of the freeze; the dentel has two; the astragal that crowns the dentel has two and a half; the quarter round has three and a quarter; the back part, which sustains the modillion, has three and a half; the corona has nine, the small ogee with its fillet ten, and the great cimaïse twelve.

The architect who is at all conversant with the works of antiquity, will see that the diversity of dimensions, in all the parts of this cornice, is in a manner endless in the several remains. We have considered it as the properest method to be taken to give those which are found in some one excellent work; these are exactly the dimensions of the cornices of the *Pantheon*, which is justly celebrated as one of the finest pieces of *Corinthian* in all the antient works.

One difference there is here from the exact order of the parts in that work; the small ogee we insert between the corona and the great cimaïse, is found in all other remains of the *Corinthian*, but in the *Pantheon* there is only a fillet.

This is a liberty the architect who erected that great work took, of deviating from the antique in general, and we have reduced his cornice in that article to the old standard, which is so greatly preferable.

When we look into the antient remains, we find a great diversity in the cornice of this order, not only in respect of the dimensions of its parts, but of the parts themselves. Chap. 25.

We see this cornice sometimes executed without a corona, as in the temple of *Peace*, and the *Coliseum*; for in these structures the modillions are placed immediately under the great cimaise.

On the contrary, we sometimes see the corona of an excessive bigness, as in the frontispiece of *Nero*.

We see in some two ovolos, one under the dentel, and the other over it: of this we have an instance in the temple of *Peace*.

Sometimes the quarter round is put under the dentel, and a cimaise over it; this we see in the three columns of the *Campus Vaccinus*. In the *Pantheon* and the temple of *Fauslina*, the member which we call the dentel is not cut into teeth.

This not cutting of the member called the dentel, is an article of some consequence. We see that in these, and it is the same in many other of the most admired works of antiquity, it is not cut: and this reconciles a particularly perplexing passage of *Vitruvius*: he says there never should be dentels where there are modillions; he had been used to see the member we speak of in the antique cornices of the *Corinthian* order where there are modillions, but, not being cut, he did not call it a dentel. Indeed the sense of that word being teeth, it is idle to call by that name a member that may be cut into teeth; the sense ought to be so restrained, as only to express it when it is so cut.

The member itself is a very graceful part of the *Corinthian* cornice, but the cutting it is certainly a great error: we see the most antient works have it entire, and the most antient master speaks of it as uncut. In the mean time, the cutting it tends to confound this with the *Ionic* cornice, than which confusion there can be no greater fault; and it adds to that multiplicity of division and ornament which are the great defect of the *Corinthian* cornice. The member lies between a quarter round and a large ogree, and these are usually both carved; the cutting of this member in such a place, confuses the eye as it would trace the ornaments: the plain form of it would have, on the other hand, a very pretty effect between them.

We see the modillions sometimes omitted in the *Corinthian* cornice; as in the temple of *Fauslina*, and that of the *Sibyl*; and in the frontispiece of *Nero* the modillions are square, and have several faces. These are the modillions at present used for the *Composite* order; in some other remains the modillions have no scroll, but are quite square before, as in the temple of *Peace*: and in some, instead of the leaf that covers the under part of the modillion, there are a diversity of other ornaments; in the *Corinthian* cornice which makes the impost of *Constantine's* arch there are eagles.

The

Book II. The leaf which covers the scroll is commonly divided into what is called the olive leaf division, but sometimes we find it the proper acanthus, as in the baths of *Dioclesian*; and this is much more beautiful.

The place of the modillions is less regarded in many instances of the antique, than one would imagine it ought to be; in the three columns of the *Campus Vaccinus*, and in *Constantine's* arch, they are placed at such distances that one comes over the centre of every column; but they are more frequently disposed altogether at random. In *Nerva's* forum, instead of three, there are four over every column; so that the number makes it impossible there should be one over the middle.

The disposition of modillions in pediments is a point much debated; in the antique they are generally placed perpendicularly to the horizon, but the modern architects set them square to the declivity of the pediment: *Vitruvius* tells us the *Greeks* put in modillions in pediments, but left them plain; they acted strictly up to propriety. The modillions represented ends of rafters, and none of these come into a gable end; we say they represent in this place purlins. The works of carpentry ought to govern all that relates to modillions, and dentels which are their representations. Reason therefore says, that the position of the modillion in a pediment should answer the situation of a purlin: this is placed perpendicular to the declivity of the pediment, and the modillion should be so placed also. The question is, shall we take the antique implicitly for our guide, or shall we dare to follow reason? We see some instances of reason having prevailed, and they have been all approved.

We see lions heads in the great cimaise of *Corinthian* cornices: these we owe to *Vitruvius*, for they are scarce found in any of the antique works; in this part of the columns in the *Campus Vaccinus*, there are *Apollo's* heads, with rays placed in a kind of flower composed of six acanthus leaves.

The pannels between the modillions in the soffit of the cornices, are commonly adorned with roses; their form is square, or oblong, but more usually the latter: they are square in the temple of *Jupiter fulminans*, and in the baths of *Dioclesian*; oblong in the porch of the *Pantheon*, and in the arch of *Constantine*. Sometimes there are roses without pannels, as in the temple of *Peace*, and in the *Coliseum*. In the baths of *Diocletian* the roses are alike, but most commonly they are different.

The volute of the modillions sometimes is carried beyond the ogee, as in the baths of *Dioclesian*; and in other instances we see the ogee beyond it, as in the porch of the *Pantheon*: and we see within the *Pantheon* that it is made to advance half way the ogee.

The leaf which covers the modillion, in the same manner has different proportions in various works; in the baths of *Dioclesian* it extends as far as the volute; in the three columns of the *Campus Vaccinus* it leaves the volute beyond it; and in *Nerva's* forum it advances to its middle.

OF ARCHITECTURE.

We have hitherto spoken of the variations of the antique, it is fit we take notice of Chap. 26. those of the moderns; *Scammozzi's* Corinthian cornice is very singular. There are in this no dentels, and the modillions are so small that they are lost in the corona, whose projecture is enormously great. It is easy to see the use *Scammozzi* has here, as well as in the *Ionic*, made of the *Composite* capital; but this is a variation from the antique, founded on fancy intirely, and adds to the imperfection of the cornice of this order.

In *Dioclesian's* baths the projecture of the corona runs beyond the modillion: but this is against the character of the order; and, though very faulty, is less than *Scammozzi* gives it.

There is a use in the smallness of these modillions in the coupling of columns, and as this was a practice unknown to the antients; so far there may be merit in reducing this part; but in the rest *Scammozzi* is too arbitrary: the dentel is an essential member now, according to all custom, and the great projecture he gives the corona is altogether faulty. This cornice of his approaches to what our architects call the composed cornices, or composed orders; but they are liberties not to be taken without great judgment; and, in general, he who has most will be most cautious how he takes them.

C H A P. XXVI.

Of the CORINTHIAN pedestal.

WHEN it is thought proper to give the *Corinthian* column a pedestal, its proportions, according to *Palladio*, should be these.

Its entire height must be a fourth part of the length of the column.

This height must be divided into eight parts, and of these one is to be given to the cimafum, and two to the base: there will then remain five eighths of the entire height, and these are the measure of the die or trunk of the pedestal.

The base is to be divided into three parts, and two of these are to be allowed to the socle, and one to the moulding. These are the concise rules of *Palladio*, which are sufficiently intelligible.

Otherwise the parts and proportions are to be determined thus: dividing the diameter of the column into thirds, which are what some call little modules, the whole order must be forty three of these in height; the pedestal, in this case, is nine thirds high, the column having eight and twenty, and the entablature six.

The whole base is to have a fourth part of the height of the pedestal; and the cornice half a quarter; the remainder is for the die, as before given.

A COMPLETE BODY

Book II.

The fœcle is to have two thirds of the base; then the other part is to be divided into nine, and thus the height of its members is to be determined. These members are five; first there is a torus laid upon the fœcle, on this is placed an inverted cimafium with its fillet, and then an upright ogee with its fillet under it; these compose the mouldings of the base.

The torus is usually decorated, and the upper ogee; the other, with the fillets, being plain.

Of the nine parts the torus is to have two and a half, the cimafium and its fillet three and a half, the half being for the fillet; and the upright ogee and its fillet three, half a part being there also allowed to the fillet.

The projecture of the torus is that of the whole base; that of the cimafium is two fifths and three quarters of the third of the column's diameter, and that of the ogee with its fillet one fifth.

Palladio is the author of this base, in whatsoever form, and by whatsoever terms it is described. The arch of *Constantine* furnished him with the idea, but he has varied from that in one particular; the upper member of the base in that is an astragal with a cavetto over it; and, in the place of this *Palladio* has put an ogee, in which he has plainly improved upon his original.

The cornice is composed of six members; these are an ogee with its fillet; a cimafium which rises under the corona, which is hollow, to make a drip; a corona with an ogee and its fillet upon it.

To determine the proportions, the whole must be divided into eleven parts; one and a half are to be given to the lower ogee, and half a one to its fillet. Three are to be the measure of the cimafium, three to the corona, two to the ogee that crowns it, and one to its fillet.

The projectures, counting by fifths of the third of the column's diameter, are these: the lower ogee with its fillet has one fifth from the naked of the die; the cimafium to the drip has two fifths and the sixth of a fifth; the projecture of the corona is three, and that of the upper ogee with its fillet is a fifth beyond the corona. This is the cornice of *Palladio*, and is very well supported by the antique: but in this, as in other instances, we see great variations in the old remains. In the arch of *Constantine* the cornice of the pedestal is extremely irregular; it has only four members, so that the proportions between its members, and that of the base, which should be universally observed, is lost. The parts also are ill proportioned; they are a fillet, an astragal, and a cimaise with its fillet; the fillet under the astragal is extremely small, and the astragal and cimaise disproportionately large. There are other variations as irregular, but less striking than these; and, upon the whole, we may determine that the antients did not regard the pedestal in any order, as an essential part.

We shall conclude this chapter with some remarks on the whole *Corinthian* order: Chap. 21. we have shewn what are its beauties, and have been free, on the other side, to mark its defects; we may see from these that architecture has not yet been carried to all that perfection of which it is capable, not in the orders themselves. Nothing can be so worthy the efforts of a real genius in this science as the endeavouring to give it that perfection.

The method of attempting this must be by hiding the defects without injuring the beauties; and this may be done certainly in taking from the great projection of the cornice in this order, which is almost as great as in the *Doric*. The ogee which crowns the platform of the eve encreases greatly this projection of the cornice, and we see some have of late been so sensible of this that when the columns were of a large model, they have suppressed it; but this is not the method, for then the cornice wants its true proportions, and the crowning becomes too flat. This therefore is not to be done, but it is not needful thence to conclude that no method can be found. The ancients studied from nature; we have nature, and their models. Let us perceive where are the defects, and endeavour, upon the principles of nature and reason, to remedy them.

Nothing is so easy as running into one fault, while we attempt the remedying of another; and if we set about this difficult undertaking without the due care and the due knowledge, most probably the fault we make will exceed that we avoid.

SECTION III.

Of the two additional ORDERS of the *Romans*.

C H A P. I.

Of the *TUSCAN* Order.

THE *Romans*, charmed with what the *Greeks* had left them of regular architecture, followed their steps, and improved in elegance upon their designs. They saw the happy use to which the three orders of columns served in all magnificent buildings; and they were ambitious to encrease their number, that they might be masters of a larger variety. They have done this by adding two orders, one at each extreme, placing the *Tuscan*, of which we are to treat here, below the *Doric* in simplicity, and the *Composite* above the *Corinthian* in ornament.

These are the two additional orders: if it be required, Whether they were needed? it may be answered, that very noble buildings may be erected without them: and it is but justice to the *Greeks* to add, that there is not an equal genius disclosed in their invention to that shewn in the devising of theirs; nor have they the merit of such perfectly distinct characters.

Though number is not wanting, variety will always be agreeable; and although the *Romans* have not succeeded so happily in their addition as the *Greeks* did in the invention of the others, it is no proof that an excellent addition is not yet possible. For the encouragement of him who shall attempt it, we shall observe that there is, in reason, no limitation of number in this respect; and, for his great caution, we shall recommend to him to follow the steps of the *Greeks* who invented, not of the *Romans* who imitated.

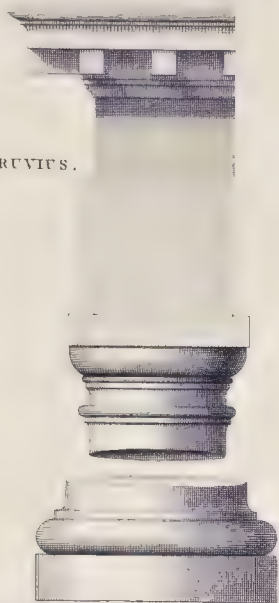
The *Tuscan* order is, in reality, no other than a gross *Doric*: it is the first order reduced from its condition of elegance, and good proportion, to the coarseness with which it first set out, or to something more than that. There is little invention in it: the *Greeks* soon improved their first order so far, that there was properly an old *Doric* and a new; and the *Tuscan* is little other than this old *Doric*, with a yet greater massiness.

How-

TUSCAN ORDER.

Pl. 5

VITRUVIUS.



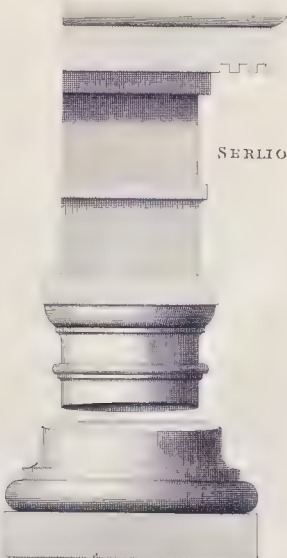
PALLADIO.



SCAMOZZI.



SERLIO.



10 20 30 40 50 Mm

J. H. Thompson



However, though we are not for setting this addition to the orders in a better light than it deserves, neither let us deny it the proper merit. It has strength and a grace even in its plainness; it is the most simple of all the orders, and has the air of an original more even than the *Doric*. Its sole purpose seems to be use, and it wants all ornament.

In the *Tuscan* order, we see the *Doric* made stronger by the shortening the shaft of the column, and plainer by the small number and great size of its mouldings. Some writers have carried this plainness and simplicity too far; but that is not needful sufficiently to distinguish it from the *Doric*. On the other hand, some have varied too much from this affected plainness, and brought it nearer than they should to the *Doric*. Moderation is the rule in all these things.

The use of this massive order is, where strength is required. In publick buildings, and in the lower parts of large edifices, it comes in very well.

It is, of all the orders the most easily executed; and, when employed with judgment, not only has a grace in itself, but gives a new beauty to the others by the contrast; its plainness being a very happy foil to their several ornaments, and its shortness shewing their height to advantage.

C H A P. II.

Of the TUSCAN base.

AS the character of the *Tuscan* order is simplicity, it has its peculiar base, the plainest and the simplest of any. This consists only of a single torus, with a cincture, or annulet, above it, and the plinth below: the cincture being usually understood as belonging to the shaft, and the plinth considered as distinct from the base, this order may be said to have for a base only a single large torus.

Palladio, including the plinth and cincture with the torus, in the article *BASE*, says its height is to be half the diameter of the column. This he orders to be divided into two equal parts; one of these is for the plinth, the remaining part is to be divided into four, three of these are for the torus, and one for the cincture.

The projecture of the base he determines to be a sixth of the diameter of the column.

Palladio says the cincture may be made somewhat less than a fourth of the whole measure of the torus and it; and some determine it to be a fifth, instead of a fourth, of the whole. Some make it less than this, but the medium is better in practice than either extreme.

Book II. *Palladio* follows *Vitruvius* in giving the plinth half the height of the whole base; but this is not an universal practice. In the column of *Trajan* it is less than half by one minute; and *Scamozzi* runs so far into extreme on the other side, that he makes it three minutes greater.

The height of the torus, according to *Palladio's* measure just given, is twelve minutes and a half; and in the *Trajan* column it is of the same height; but *Serlio* makes it only ten minutes; if we examine these proportions strictly, we shall find *Serlio's* is much farther from truth than *Palladio's*, who followed what there is in antiquity; but perhaps the reducing his proportion by half a minute may be advantageous.

The cincture is two minutes and a half in height, according to *Palladio*; it is three and a half in the *Trajan* column; and *Serlio* makes it five. Perhaps, upon a careful review, a little more than *Palladio's* proportion may be best, though that of *Serlio* is palpably too great. Three minutes is a very happy measure.

The figure of the plinth is extremely particular, according to the old and some later writers. The plinth is rounded upon the plan, so that it resembles the shaft in form, and seems, more than in any other, a part of the base. *Vitruvius* describes it thus.

But this, however authorized, is a singularity that has a very bad effect: and the generality of architects refuse to follow the direction. There should be a correspondence in the entire column; and the parts between which this correspondence is most plainly seen are the plinth of the base, and the abacus of the capital. These, when they resemble one another, give an air of likeness and uniformity to the whole, and this should be preserved in every order: the rounding of the plinth utterly destroys this uniformity. The plinth also itself appears maimed when the corners are thus wanting, and the column seems to want that most essential part which we are accustomed to see square, and do not know to be of that character when round. It seems a part of the base, and that the plinth is wanting.

If caprice therefore dictated this rounding of the plinth, it is against nature and propriety in any order; and if use was ever the foundation it must hold good in all. The only pretence would be when columns were placed on a circular pavement: yet here it is not done: the square plinth agrees but ill, in these cases, with the rounded step on which it stands; but we have instances of this in the antique, and we see what course those followed from whom we take all our examples. In the temple of *Vesta* at *Rome*, and that of the *Sibyl* at *Tivoli*, there is this circumstance. If ever the ancients had thought of rounding a plinth, they would have done it here; but they have found a better method, they have taken the plinth away, and the base rests upon the solid, without any thing between. This is the method prescribed by reason; whenever there seems a necessity of rounding a plinth, it is to be avoided, not complied with. We see columns in the most ancient works without even bases, very well they may do without a plinth, when the form of that member would render it improper.

C H A P. III.

Of the shaft of the TUSCAN column.

THE height of the entire order in the *Tuscan*, ought to be, according to *Palladio*, seven diameters. This is the rule by which the present architects, in general, work; and *Palladio* is a guide not likely to mislead them, and one whose name would authorise their errors if he should. Seven diameters therefore may be called the common standard of the *Tuscan* column, including its base and capital. But there are works in which this order makes a good appearance, though of another proportion; and authors differ a great deal on this head. *Palladio* follows *Vitruvius* literally. Fourteen semi-diameters is his measure; *Vignola* follows *Vitruvius* also, but *Serlio* makes it only six diameters high; *Scamozzi* makes it seven and a half; and in the *Trajan* column it is eight. The mean measure among these is about fourteen semi-diameters and two thirds; this sufficiently distinguishes it from the *Doric*, whose mean proportion is sixteen, and lays the foundation for a regular progression in all the rest; the advance from order to order being made by two thirds of a diameter.

Serlio's Tuscan is too gross and clumsy, and that in the *Trajan* column advances too near the *Doric* measure.

The *Tuscan* column has at the bottom of the shaft, a cincture, whose measure we have given treating of the base; and at the top it has an astragal, over which is the neck, or, as some call it, the freeze of the capital.

The diminution in the shaft of the *Tuscan* column is very great: *Palladio* sets it down at a fourth part of the diameter below: this is the only case in which the diminution is regulated by the order; and in this *Palladio*, though he have the authority of *Vitruvius*, yet is very bold in giving so great a diminution. He has been too literal a follower of his master: there are instances, as we have shewn, in which he has departed from his rules, and he never had more occasion than in this. We have but one *Tuscan* work remaining of antiquity, that is *Trajan's* column; and in that the diminution is but a ninth part. *Palladio* therefore had authority for reducing this vast diminution, and it is owing to his keeping to the text so closely that *Le Clerc* observes his column in this order is not fit to be used.

He prefers *Vignola's* to *Palladio's*: *Vignola* makes the diminution only a fifth.

This gives a reduction of five minutes on each side the column, ten in all; and this is a sufficient distinction from the rest of the orders. The cincture at the bottom, and astragal at the top of the shaft, ought to have the same measure in all the orders, the cincture having a twentieth part of the diameter of the column, and the astragal an eighteenth; the fillet under the astragal should have half its measure, and these are the just proportions here. The projectures of the astragal and the cincture are to be four minutes beyond the naked of the column.

We

Book II. The adding this astragal under the ovolo gives the *Tuscan* capital a greater resemblance of the others; but this is far from being a merit, for its character is to be quite distinguished from them. The distinction from the *Doric* is essential to the making this an order; and all addition of members under the ovolo, though they be not the same, is bringing it nearer to a resemblance of the annulets of that order.

C H A P. V.

Of the TUSCAN entablature.

THE *Tuscan* entablature, according to its original design, very well answers the rest of the composition in plainness, solidity, and an appearance of strength: some have, of later time, attempted to introduce decorations into it, but these are unnatural.

This entablature consists, like the others, of three parts; architrave, freeze, and cornice, but all very plain: the architrave and freeze are entirely plain, and the cornice has only a few simple mouldings.

The height of the whole entablature is to be six modules, and this is to be divided into twenty parts for the general division: six of these parts are given to the architrave with its fillet, the fillet having one; the freeze has also six parts, and the remaining eight make the cornice.

In the other orders, after mentioning the whole entablature, we have treated of each of its three parts in separate chapters; but the plainness and simplicity of this renders such sub-division unneedful.

The *Tuscan* architrave is a plain piece, sometimes utterly without addition; at the utmost only having a fillet at the top, separating it from the freeze. *Palladio* observes, that it is usually of wood, and is no more than a simple beam: the freeze, which rises upon the architrave is, in the same manner, a plain piece; indeed, the old writers make it more than plain, for they leave it rough, and take little pains to conceal the joints; so *Palladio* represents it in his figure, and this agrees with the idea of *Vitruvius*, who calls the *Tuscan* a rustic order.

The cornice is composed only of mouldings; at the top there is an upright ogee, under this is the corona, under this is a cima recta, and under that a cavetto. This is the cornice of the *Tuscan*, according to *Palladio*: the fillets which separate these members, being all there is more; and this agrees well with the character and idea of the order. Others make additions, but mostly for the worse: however something may be done, not disadvantageously, by the addition of astragals, and some other small variations, which still leaving the cornice plain, give it a little more variety without impairing its strength.

Thus

A cornice very agreeable to the order may be executed in this manner: let the first member be a large ogee, its height two of those eight parts which are allowed to the entire cornice; let this be terminated by a fillet, whose proportion is to be half a part; upon this let there arise a corona, whose height shall be two parts and a half; and over this let there be an astragal with its fillet, one part being allowed to them, and the fillet having half as much of this as the astragal; over this let there rise a quarter round, which is to terminate the cornice at top, instead of the great cima.

Chap. 5.

Here is a cornice altogether in character with the order, and not without beauty.

Its heights in the several parts we have shewn; its projections are best given by dividing a third of the diameter of the column into fifths, three fifths are to be allowed to the ogee and its fillet, reckoning from the naked of the freeze; the corona is to have a projection of seven fifths and a half; the astragal and its fillet nine; and the quarter round twelve.

When we examine all that has been delivered by way of rule for the architect in the *Tuscan* order, we see a great variety of opinion. *Vitruvius* makes the architrave larger not only than the freeze, but even than the cornice; *Palladio*, though he does not follow his master in the full extravagance of this measure, makes it larger than the freeze; and, on the other hand, *Vignola* makes it less. He had seen the faults in these proportions, and, in the rage of shunning it, he has run into one not less, though opposite; the making the architrave and freeze equal, has a plainness and composure very proper in this unornamented order: *Serlio* must have the praise of having first directed this proportion, and the architects of most judgment have followed it.

Scammozzi is unpardonable for loading the *Tuscan* architrave and cornice with decorations quite foreign, and contrary to the character of the order; he gives also a kind of triglyph to the freeze, though without channels: this betrays a love of prettynefs at the expence of judgment. *Serlius*, on the contrary, reduces the parts too much; his is altogether mean and poor: this was not necessary, though plainness was. We see how difficult it is to combine fancy and judgment. The judgment of *Serlio* is too cold and tame: the fancy of *Scammozzi* is too wild. This last has given the *Tuscan* cornice ten members, and the other allows it only three: a medium is better. *Vitruvius*, and *Palladio* who follows him, allow only a plain square beam to the architrave; but this is coming toward the cold reserve of *Serlio*, it is scarce distinguished from the freeze. A fillet is a member so very plain that it may very well be added, and it gives some variety without departing from the character; *Vignola's* cornice has a kind of middle character, and that, very little varied, is given by *Perrault*:

The order is to be kept distinct from the *Doric*, and in character in all its parts; this is to be the purpose the architect is to have in view: and in compleating it in this manner he may reasonably be allowed to take somewhat more liberties than he ought in working upon those original and everlastingly established orders left us by the fathers of architecture.

A COMPLETE BODY

C H A P. VI.

Of the TUSCAN pedestal.

PALLADIO has given a short direction for the pedestal to the *Tuscan* order. Its height, he says, is to be one module, and it is to be made plain. Its form is therefore a longish square, for as it projects beyond the plinth, its length is greater than its height, determined by that simple measure.

There may be however a somewhat more ornamented pedestal, which may sufficiently answer the character of the column.

This pedestal is then to consist of the three usual parts; a base, a die, and a cap.

The base is to consist of two parts; a plinth, and the mouldings, and the top is to have its cornice, or cap.

In the more delicate orders, the mouldings of the base are to be smaller and more numerous, and in the more massive and strong, they are to be fewer and plainer. In this the pedestals follow the structure of the columns to which they belong, and it is this which gives them their harmony.

The *Tuscan* base, though it need not be entirely destitute of mouldings, must, for this reason, have the fewest of any order; the *Doric* has three, which is one less than the *Ionic*; and the *Tuscan*, to continue that regular progression, should have two, that is one less than the *Doric*: in the same manner as the *Doric* pedestal has four mouldings, this should have three. This is regularity; and thus the orders, while they rise one above another, maintain a general uniformity.

The mouldings of the base of the *Tuscan* pedestal may be two, a cavetto and its fillet, the fillet being placed under the cavetto. To find the proportions, we are to observe that the die is the largest part; and of the two others, that the base is larger than the cornice, this being universal in all pedestals. In the base also the socle, in this, as in the other orders, is to be larger than the mouldings.

The part of the *Tuscan* base allotted to the mouldings is to be divided into six parts, and of these four are to be given to the cavetto, and two to the fillet under it; the socle is to be plain.

The cornice, or cap, of the *Tuscan* pedestal is to be divided into eight parts; its members are a platband, a cavetto, and a fillet, and they are to be thus proportioned: the platband, which serves instead of a corona, or drip, has five; the cavetto is to have two, and the fillet one.

To find the projectures, divide a third of the diameter of the column into five Chap. 6. parts. The projecture of the whole base, without the plinth, is to be equal to its height; and the projecture of the cornice is to be the same with that of the base. This is singular in the *Tuscan* order, for in all the others the projecture of the cornice is a little more than that of the base. The projecture of the cavetto of the cornice is one fifth and a half; and the cavetto of the base is in projecture two of these fifths, reckoning from the naked of the die.

Upon this plan a pedestal may be executed for the *Tuscan* order very proper for the column, and sufficiently ornamented; if we look into the rules laid down by authors, and into the practice of the antients in the *Trajan* column, we see a vast variation on either side; but this medium is more reasonable. In the *Trajan* column, the base is extremely ornamented; it has in the base and cornice all the mouldings of the *Corinthian* order. This is an excess on the side of ornament, so many mouldings by no means becoming such an order; nor is the practice justifiable, though we can produce such an authority for it.

On the other hand we have observed that *Palladio* gives no ornament at all. What he orders is not properly a pedestal, for all pedestals should have the three essential parts, a base, die, and cornice, but his is only a socle, a plain square stone, neither divided nor ornamented at all.

As the architect is not to crowd this pedestal with ornaments because he finds it so in the antique, neither is he to reduce it to a plain square stone, because *Palladio* advises it.

Let him remember that a proportion and progression of ornament is to be observed throughout the whole series of the orders, and that there is some general method of construction to be regarded in them all. This is only to be attained in the present case by keeping a medium between the two extremes of plainness and decoration; and such a mean is preserved in the pedestal here directed, and in that of *Scamozzi*.

C H A P. VII.

Of the Composite order.

IN coming from the *Tuscan* to the *Composite* order, we advance from the plainest to the most ornamented of all the five; the others maintaining a place between them. Those we have treated of already, and from what has been there said, these will be much more familiarly understood. They are best treated of together, because they are both additional; and as the *Tuscan* was easier described after the *Doric*, from which it was formed by a reduction of parts; so the *Composite* will be best understood after the *Corinthian* and *Ionic* of which two it is composed.

The *Composite* is allowed to be, as its name imports, a composed order, formed of two others; and architects of all times have, and those of all succeeding times may, indulge their genius in varying and compounding ornaments, in the way of orders, in this manner.

Though there be but one regular *Composite* order allowed under that name, yet we see the remains of many other constructions of a like kind among the relicts of antiquity; and we see in the more entire works of a later time, instances of a parallel nature, which are called composed orders.

This, which is distinguished by the name of the *Composite*, and is received into the number of regular and established orders, is owing to *Vitruvius*; he has left the proportion and characters of it, and the moderns have, with reason, in many particulars, followed his steps. We see in this the marks of a genius much superior to what is found in those arbitrary combinations we so frequently find under the name of composed orders: *Vitruvius*, in his proportions, considered the mixture of beauty and strength; this should be in every one's mind who attempts variations from the rules of the orders.

This ancient has happily joined the members of one order to those of another; in every part accommodating what he has done to the whole. However, with all these excellencies, the *Composite* order is not without its faults. We shall be as free to name the one as to praise the other: these we shall take occasion to mention with the more striking particularities, in treating of the several parts.

When we come to examine things with great strictness, even the *Corinthian*, though it has a great deal new, yet is not altogether original; *Vitruvius* has observed that it is indebted to the *Doric*, and the *Ionic*, in so great a degree, that it may be said to be composed of them with some additions. We may observe also that such freedoms have been taken in times since the invention of the orders, that the antique *Corinthian* is almost as different from the *Corinthian* of *Vitruvius*, as the *Composite* is from the antique *Corinthian*.

COMPOSITE CAPITALS & BASES.

A: PALLADIO.



ARCH of TITUS.



ARCH of SEPTIMIUS.



A: PALLADIO.

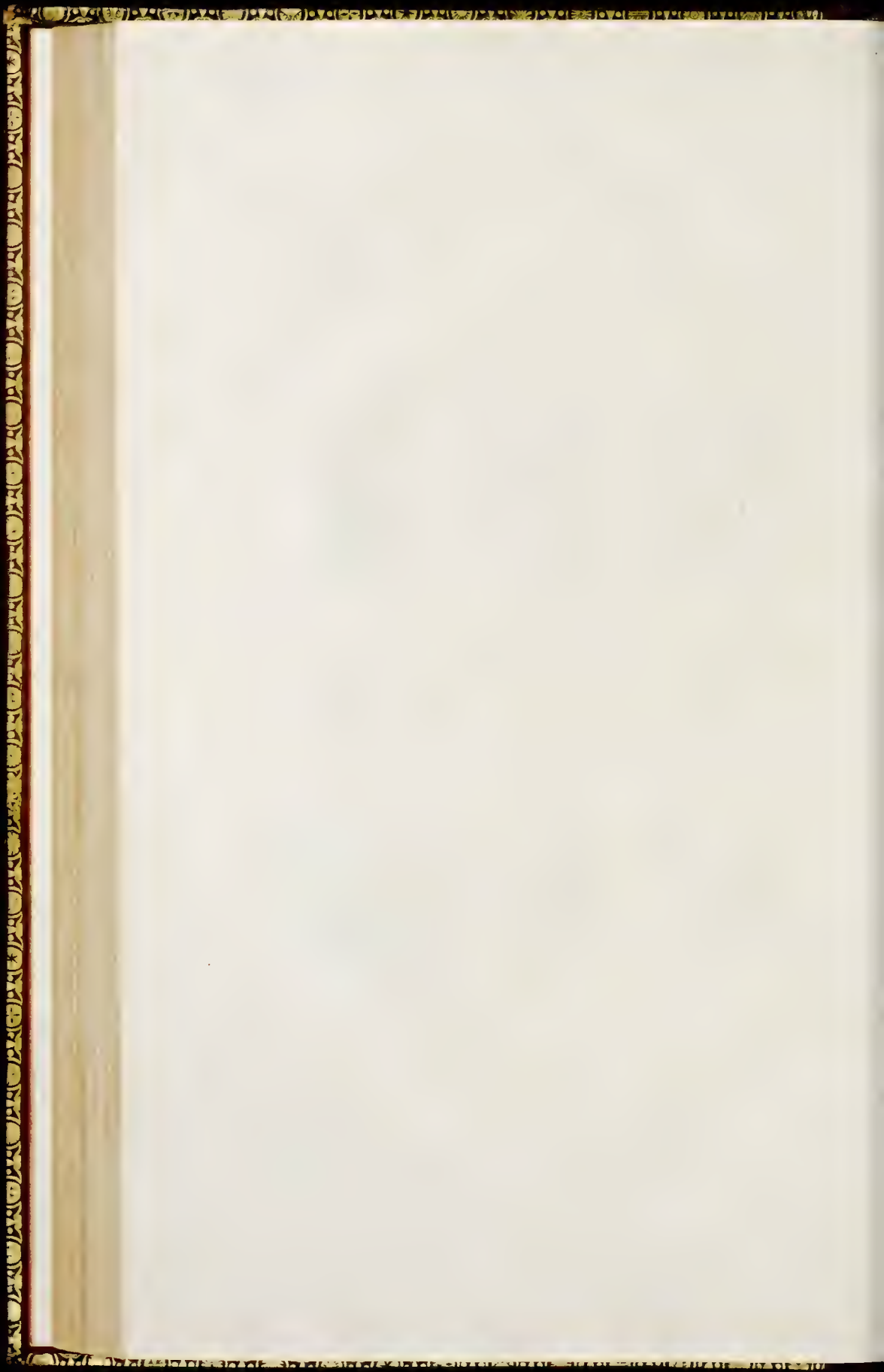


VIGNOLA.



DIOCLESIAN'S BATHS.





Serlio was the first who added a fifth order to the four characterised by *Vitruvius*.^{Chap. 7.} He form'd it upon the remains in the temple of *Bacchus*, and some other edifices of early time, but he took nothing except the capital from the antique.

Palladio gives it a particular entablature, which he takes from *Nero's* frontispiece, and *Scammozzi* joins him in this, and with reason; for the entablature is not like that of the *Corinthian* in other antique works. This part therefore they took, and joining it to the capital of *Serlio*, completed a new or fifth order.

The *Composite* is generally understood to be a lighter and more elegant order than the *Corinthian*; but this is not true: the phrase should be altered, and it should be called a more rich and decorated order, for that is the true character of it, and was alone the design of its inventors; the capital is heavier than the *Corinthian*, and the entablature, though very rich is certainly also very heavy.

Vitruvius, to whom we owe this order, delivered only its character, and never thought of varying its proportions, and it is therefore he did not allow it to be a distinct order; but *Serlio*, giving it a particular proportion, made it distinct, and the moderns, in general, have followed him. *Vitruvius* says its capital is composed of several parts taken from the *Doric*, *Ionie*, and *Corinthian*; but as he does not make any farther particularity in it, the whole became rather one of those compositions of fancy we see under the name of composed orders.

Those who, by adding peculiar proportions, made it a distinct order, made it higher than the *Corinthian*; but as it is more maffy, there yet remained a doubt about its place, where several orders were employed together. Its inventors designed it to be placed above the *Corinthian*, and so it is placed by the generality of architects at this time; but we see it placed under the *Corinthian* in the arch of *Lions* at *Verona*, and in some other places, and it seems to become that place better. *Scammozzi* has great reason when he gives the *Composite* the fourth, not the fifth place; the lightest order ought to stand uppermost, and there cannot be a dispute but the *Corinthian* is still the lightest of the five orders.

Book II.

C H A P. VIII.

Of the Composite base.

IN examining the works in which the *Composite* order has a share, we find it with a variety of bases; sometimes the *Corinthian* base is used, and frequently the *Attick*: *Vignola* gives it a particular base: this he takes from an antient base to some *Corinthian* columns in *Dioclesian's* baths, which differs from the common *Corinthian* base in that it has only one astragal, instead of two, between the two scotias; and the other, which is taken from this, is put between the great torus and the first scotia.

Palladio gives the *Composite* a base composed of the *Attic* and *Ionic*, which is a very beautiful composition, and greatly preferable to the others. It is an *Attic* base with astragals in the centre of the scotia.

The plain *Attic* is too simple for this ornamented order; and the *Corinthian* is, in itself, a very indifferent base, as has been observed in its place. It is therefore greatly better to use this which is particular, and therefore distinctive of the order; and it is sufficiently elegant, and without conspicuous faults.

The antients, we know, used freely enough the *Corinthian* base for the *Composite* order; we see an instance of it in the arch of *Titus*, but it is better each should have its own; nor, of all things, ought a faulty part of one order to be borrowed for another. We find they also used the *Attic* base for it, as in the temple of *Bacchus*; *Vignola's* is particular, but inferior to *Palladio's*, the astragal, which is the only member it has between two fillets, being but weak and ill-sustained by the scotias, renders this part of the base too thin and sharp. *Vignola* seems to have taken the hint of the base for his *Composite* from those in the temple of *Concord*: he has improved what he found there, but still he has left it very imperfect.

OF ARCHITECTURE.

C H A P. IX.

Ch

Of the shaft of the Composite order.

IN the shaft of the *Composite* order there is less distinctness than in any other part; nor are there those considerable variations, in respect of the height of the entire order, as we find in the others, when we examine at once the rules laid down by authors, and the remains of those antient architects from whom they drew them; those remains in which we find it lowest, making it more than nineteen semi-diameters, and those in which it is highest not exceeding twenty. In the arch of *Septimius* it is nineteen semi-diameters and nine minutes in height; in the temple of *Bacchus* it is nineteen and a half; and in the arch of *Titus* it is twenty.

Scamozzi makes his nineteen and a half, taking his measure from the temple of *Bacchus*; and *Palladio*, preferring the column in the arch of *Titus* for his model, makes it twenty. This is the most judicious height, for in this it rises properly and gradually above the *Corinthian* in height, and the progression in the orders is entire and regular, it being of two thirds of a diameter from one to another all the way.

The cinctures of the shaft in the *Composite* order, are a fillet or simple ring at the bottom just above the base, and an astragal and its fillet at the top under the capital.

Its diminution is very various in the works of the antique, and, as in the other orders, seems to have been made without any certain rule. In the baths of *Dioclesian*, the shaft is five and thirty foot high, and four foot four inches in diameter, and its diminution is eleven minutes and a half: in the temple of *Bacchus* the shaft is ten foot eight inches high, and sixteen inches and a quarter diameter; and the diminution is six minutes and a half: in the arch of *Septimius*, it is one and twenty foot eight inches high, and two foot eight inches and a half diameter, and its diminution is seven minutes. Though there be considerable variation in this article in these several instances, yet it in none rises nearly the measure of the diminution we see in some other instances where different orders are concerned, nor indeed to a medium, upon the whole computation. We may observe that the antients gave less diminution to this than to their other columns, the mean diminution being, upon the whole, about eight minutes; in this the architect is left to his fancy, either to follow the antient custom of diminishing this less than the other orders; or to give it a mean diminution, together with them, and that at eight minutes: this being found not only a middle proportion, but a very good one.

The intercolumniation of the *Composite* is the smallest of that of any order; the *Corinthian* intercolumniation is only of two diameters, this only of one diameter and a half. This is what the antients called the *pyenostyle* manner, and is the closest way in which columns are ever to be put singly.

Book II. The *Composite* order is generally executed with a fluted shaft, and the flutings are to be made exactly in the same manner as in the *Corinthian*, which it indeed resembles, when executed in its general aspect, much more than any other.

C H A P. X.

Of the COMPOSITE capital.

WE come now to the part in which the essential character of the *Composite* consists, from which it has been denominated, and for the sake of which it is established into an order. We have already mentioned in general, that this is composed of the *Corinthian* and *Ionic*; it has most of the *Corinthian* in its aspect, but it differs from that in many essential particulars.

It has the resemblance of a vessel covered with two rows of acanthus leaves, as the *Corinthian*, and they are disposed in the same manner; but, instead of stalks or branches, there are only certain little shoots toward flowering, which adhere to the vase, and round themselves toward the middle of the face of the capital. The vase is terminated just above these by a fillet, an astragal is placed over that, and upon the astragal an ovolo. Over the ovolo the volutes roll themselves till they meet the tops of the upper row of leaves, on which they seem to rest. There is not a rim spread over the top of the vase, as in the *Ionic*, but the ovolo forms its rim, and the volutes rise out of it, leaving a space between, in which is placed the rose, or flower of the capital. The volutes have a great acanthus leaf, which bends itself up so as to sustain the corner of the abacus, and it lets fall below upon the border a piece of ornamented work, which almost entirely covers it. The abacus is like that of the *Corinthian* capital, but the flower is not supported by a stalk, as in that, but seems stuck on upon the middle of each face of the abacus.

The parts therefore of which this capital consists, are a vase, or bell, within; a first and second row of leaves, with some small shoots; a fillet, astragal, and ovolo, four volutes, and a hollowed abacus with a flower in its centre.

We see by this detail of parts, that the *Composite* is richer than the *Corinthian* capital; but it is less light and less delicate.

It has however a very noble aspect, and deserves great praise; there is more elegance in the *Corinthian*, and more richness in this; that is their distinction.

To find the proportions and measures of the several parts of the *Composite* capital, *Palladio's* method is this: let the entire capital from the abacus downwards be divided into three parts; the first row of leaves are to have one of these three for their height; a second part is to be given to the second row of leaves; and the third is for the volutes. This is a very natural and very easy division.

For forming the volutes, the same method is to be observed as is described for making Chap. 10. those of the *ionic*; and to that we refer the student, to avoid a repetition. A part of the abacus is covered by the ornament of the volute near the rising; it is a little thicker in front than the breadth of the horns.

The ovolo is, in bigness, three fifths of the abacus, and its lower edge is even with the eye of the volute; its projecture is three fourths of its height, and with this it is a little more than perpendicular to the hollow of the abacus.

The astragal and fillet are in height one third of the ovolo; and the projecture of the astragal is a little more than half its height: it turns about the capital under the volute; the fillet is half the height of the astragal.

The body of the vase, or bell, answers direct with the flutings of the column. These are the measures given by *Palladio*, which he says he took from a capital of this order at *Rome*, because of its good proportions, and beauty. The architect may take this as a general direction, and he will never be liable to censure while he executes a capital upon this plan: but it is not needful that all his knowledge should be confined to this single instance. There have great liberties been taken in the construction of this capital, and some of them very happily; it is fit he should have a view of these, and know wherein their merit consists, and what are their several faults.

The height of the capital is the same with that of the *Corinthian*; that is, it is a diameter of the column, and a sixth.

When we come to very accurate divisions, four sixths being given to the two rows of leaves, and this being divided into six parts, one of those sixths is for the bending of the leaves; four sixths having been given to the leaves, three remain for the volutes, ovolo, astragal, and abacus. These three sixths being made one measure, are divided into eight; of these eight six and a half are given to the volute, which rests upon the head of the upper row of leaves; two are given to the abacus; one to the space between the abacus and ovolo in which the volutes spring; then two are given to the ovolo, and one to the astragal and fillet.

The flower which is in the middle of the abacus over the ovolo, rises to the upper part of the abacus: and is broader by the half of one of these eighths than it is high.

These are the exact proportions of its parts; to find the projectures let a third of the diameter of the column be divided into fifths, and let the projectures be regulated according to these, as in the *Corinthian* order.

The leaves of the *Composite* capital should be the true acanthus, neither cut into the olive division of fives, nor the lawrel of threes; and it will be seen, on comparison, that they are very much superior in beauty to those fantastical and false ornaments in the division.

The

Book II.

The flower does not represent a rose, or any other particular kind; but is composed of several leaves, some of which meet in the centre, and some turn off sideways; so that, upon the whole, though it be altogether out of nature, it is not without beauty.

Under the horns of the abacus, there are leaves which return upwards, as in the *Corinthian* capital; and there are others which follow the course of the volute, lying upon the side of it. The little tendrils which seem to answer to the stalks in the *Corinthian* capital, terminate here in a pretty kind of roses, which lie upon the vase, or bell, more of which appears naked than there does in the *Corinthian*, because of the absence of those stalks which cover its upper part, as the leaves do the lower in that order.

What we have given are the general and most approved measures, but in this capital we have observed there will be found a great diversity, when its execution in different edifices is considered. This variation is not only found in the proportions of the members, but in the whole height.

The stated height here given is seventy minutes; but in the arch of *Titus* we see the height of the *Composite* capital seventy-four and a quarter; and in the temple of *Bacchus* it is seventy-six. On the contrary, in the arch of *Septimius* this capital is but sixty-eight minutes and a half; and in the goldsmith's arch but one quarter of a minute more. *Serlio* establishes it only at sixty minutes; seventy therefore is a mean proportion, and is found the most happy in the execution.

In respect of the parts of the capital, the abacus which we have given at seven minutes and a half, has eight minutes and two thirds in the goldsmith's arch; and nine minutes in the arch of *Septimius*, and in the baths of *Dioclesian*, and ten in the arch of *Titus*; but in the temple of *Bacchus* we meet with a proportion that far exceeds all these; it is there thirteen.

The student has all these measures before him, and upon examining the capitals in which they stand, though there is all this variety, he will not find any thing preposterous. A mean proportion between these would favour of the fault they have in general, that is, of giving too much massiness and weight to the capital; and as this was not intended to be the character of it, we have allowed a smaller proportion.

The volute, according to our division, has five and twenty minutes, and this is its exact proportion in the temple of *Bacchus*; but in other works of the antique we see great variation in this respect, and that on both sides the measure: in the arch of *Titus* the volute of the *Composite* has twenty-eight minutes; and in the baths of *Dioclesian* it has but twenty-two. We have selected the proportion from the temple of *Bacchus*, because it is a mean measure, and because it has the finest effect.

There are, beside these variations in the proportions of the parts some very essential differences in their construction.

The volutes usually descend till they touch the leaves, as we have represented them; but in the arch of *Septimius*, and the baths of *Dioclesian*, they are found separated from them. Chap. 10.

The two rows of leaves which at this time are usually made equal in height, are found in some of the antique remains unequal.

The volutes, as we have observed, commonly spring from the vase, or rise out of it; but sometimes the rim which forms them is carried all along the top of the ovolo, without entering into it, or rising from it, as in the old *Ionic*. We see an instance of the first, or usual manner in the arch of *Titus*; and of the other in the temple of *Bacchus*, and the baths of *Dioclesian*. *Palladio* and most others adopt this method of their springing from the vase, as in the arch of *Titus*; and it is useful by way of distinction; but we have observed already, in treating of the *Ionic*, that this method leaves the abacus but ill supported; and that is in some degree wrong, as it comes under so large an entablature.

Palladio, and most of the other writers on the science, make the sides of the volutes parallel; but, on the contrary, we see them contracted in thickness in the middle, and enlarged above and below; in the temple of *Bacchus*, and in the baths of *Dioclesian*, as also in the arches of *Titus* and *Septimius*.

We have of late got into a lighter manner of making these volutes also: our carvers have introduced this, for in all the works of the ancients it is more solid, and it is ordered to be so by all writers. However, as too much weight is the greatest objection to which this order is liable, nothing is more proper than to give this free and easy air to its larger parts; the intent of the order being plainly to unite as much delicacy as could be, with the most full proportion of ornaments in every part where they could be placed.

A COMPLETE BODY

C H A P. XI.

Of the Composite entablature.

THE entablature appropriated to the *Composite* order is not without its merit, but it has also its defects. It is large for so light an order, and the desire of filling it with ornaments has carried the architects so far that they have palpably crowded it.

The architrave is too much ornamented, and ill terminated, for it has a look of too much tenderness for the weight above; and its profile is ungraceful.

The cornice is heavy, and there is not sufficient variety in its construction.

The judicious architect will find a great deal to reform in this part of the *Composite*, and we have observed that it is an order in which he may be allowed more liberty in that way than it would be proper for him to take in any other.

The height of the entire entablature is a fifth of the column, and this is divided generally, as in the other orders, into twenty parts; twelve of which are given to the architrave and freeze, these being equal, and eight to the cornice. But we shall have occasion to observe presently great variations in the division of this whole measure.

In the temple of *Bacchus*, the freeze is less than the architrave, and the two are equal in that of *Titus*. Most of the antient remains have them unequal, and most of the authors who have laid down rules for the science direct them to be made so: but *Vignola*, following the measures of the arch of *Titus*, makes them equal.

After this general account of the entablature, we shall enter on its several parts in detail.

C H A P. XII.

Of the Composite architrave.

THE architrave in this order differs very considerably from that of the *Corinthian*, for it has only two faces, whereas that of the other has three. This is a very singular variation from that order; for in one intended to be fuller of ornaments than any other, the faces of the architrave should have gone encreasing: the truth is, the antients, intending to make their *Corinthian* the most decorated of all their orders, have in this respect carried the point as far as it would go. More than three faces in an architrave would have been preposterous, and those who formed this additional order being sensible of it, reduced the number to two; they preferred a variation to a sameness with the *Corinthian*, though at the expence of the character of their invention.

Between the two faces of the *Composite* architrave, there is a small ogee, which is usually carved; and it is terminated at top by three members, an astragal, a quarter-round, and a cavetto: it is this cavetto we have objected against, as making the crowning of the architrave too tender. The three mouldings here are also one too many; this is rising too fast in ornament, and is crowding rather than decorating; the astragal and ovolo would certainly have a better effect without the cavetto.

To determine the heights of these members, the whole architrave is divided into eighteen parts; of these five are given to the first face, and one to the little ogee that crowns it; seven to the second face, and half a part to the little astragal at the top of it. The quarter round over this astragal is to have one part and a half, and three are to be allowed to the hollow and its fillet; the fillet having one and a quarter.

This is the most approved measure when the two faces of the architrave are unequal; and when they are equal the same proportion is to be allowed to the mouldings.

The projecture of the *Composite* architrave is the same with that of the *Corinthian*, two fifths of a third of the column's diameter.

Palladio, who has given this architrave to the *Composite* order, took the idea of it from the architrave of *Nero's* frontispiece; the order there is *Corinthian*; it is the same also in the *Basilic of Antonine*, where the order is not *Composite*, but, as in the other instance, *Corinthian*; and it must be confessed that although this be an architrave that very tolerably becomes the *Composite*, we see something very different from it in the remains of that order in the antique; in the temple of *Bacchus* it has three faces, and they are all quite plain and not separated by so much as astragals; in the arch of *Septimius* the *Composite* architrave, has but two faces, but it is terminated by an
ogee

Book II. { ogee with an astragal, which brings it very near the *Corinthian* order; and in the arch of *Titus* it is altogether *Corinthian*.

These are liberties the modern architect may take, because he can support his work upon the authority of antiquity; but he had better pursue a middle course. Let him preserve an architrave peculiar to the order, but let him retrench the abundance of ornament that is directed in this part. We have observed that, without the cavetto, the common architrave that is allotted to the *Composite* is very proper; but perhaps he may improve it farther.

C H A P. XIII.

Of the COMPOSITE freeze.

THE freeze, in the *Composite*, as in the *Corinthian* order, may be either left plain, or decorated: but as the design of this order is elegance and ornament, it is much more natural as well as more common to cover it with carved work.

This it has in common with the other elegant orders; but there is something singular in the form of it, according to *Palladio*, for he makes it not flat, but swelling or rounded, as has been done by some in the *Ionic* order, whose freeze, in that case, is called a pulvinated freeze.

Palladio has the authority of the antique for giving this form to the freeze of the *Composite* order, for it is so in the temple of *Bacchus*. It very well becomes the order also, and it gives a variety; there is an appearance of more weight in it than in a flat freeze, but there is this also in the capital; and if it cannot be discharged in one part, it is to be retained, or even added, with moderation, in another, that there may be conformity in the whole. This therefore must be allowed a very judicious practice.

It is singular also, that in the arch of *Septimius*, the freeze is joined to the architrave by a large sweep. In the frontispiece of *Nero*, the freeze has also a sweep, but it is in the upper part and smaller; and it serves happily for joining the naked of the freeze to the first member of the cornice, which is a fillet.

This sweep is large in the frontispiece of *Nero*; but this is a very judicious practice, for the freeze is there highly enriched with sculpture; and had there not been this sweep, the ornaments would have equalled the projecture of the first members. This is a fault too frequent in the execution of the more elegant orders, but it is overlooked: it might be easily remedied by this practice of giving a proportioned sweep at the top of the freeze, which would there be as proper as it is improper below.

This practice, though we see the rudiments of it among the antique, was not universal: they had their architects of greater and of lesser judgment as well as we. In the temple of *Fortuna virilis*, and that of the *Sibyl* at *Tricoli*, we find this sweep; and it

has a very happy effect ; but in the temple of *Jupiter fulminans*, and that of *Faustina*, Chap. 13. where there was the same reasonable occasion for it, there is none.

The attentive reader will see from this, and many other observations of a like kind, interspersed in these accounts of the orders, that he has a vast field before him for the indulging his genius. There are things the antients have done seldom, which he will obtain applause by following ; and many they have done frequently which it will be prudent in him to avoid : let him see all, and judge of all, and he will then select with discretion. There is a beaten path in which he may travel, even without genius, and be safe ; but he who is worthy to be called an architect, will not condescend to follow the practice of any one author with an implicit veneration, when he sees that, among those remains of the antients, which all the world admires, there is so great variety.

C H A P. XIV.

Of the Composite cornice.

WE have observed already, in speaking of the entablature in general, that the cornice in this order is too heavy, and that it wants variety. The same member is too often repeated, and gives a look of sameness, by no means agreeing with the spirit of this composition ; and the projecture of the eve of the cornice beyond the mouldings is useless, and renders the mouldings of little effect. These are its blemishes, but, upon the whole there is in it a great deal of magnificence ; there is therefore the more reason to wish it were reformed.

The height of the cornice entire is eight twentieths of the whole entablature : it consists of thirteen members. For the construction and proportioning of these it is divided into ten parts, and they are formed as follows.

The first member is a fillet ; this rises immediately over the freeze, and its measure is a quarter of one of the ten parts ; the second member is an astragal, and this also has one quarter of a part ; the third member is an ogee, and has one part ; the fourth member is the first face of the modillion, and this has one part ; over this rises the fifth member, which is a small ogee, and its measure is half a part ; the sixth member is the second face of the modillion, and the measure of this is one part and a quarter ; the seventh member is a fillet, and its measure is a quarter of a part ; the eighth is a quarter round, and it has half a part ; the ninth is the corona, this has two parts ; and it has a throat underneath, the measure of which in depth is one third of a part : the tenth member is an ogee, its measure is two thirds of a part ; the eleventh is a fillet, and has one third of a part ; the twelfth is the great cymaise, its measure is a part and a half ; and the thirteenth is a fillet, whose measure is half a part.

These are the proportions of the several members of the *Composite* cornice ; as to its projecture in the several parts, that is regulated by the division of a third of the diameter of the column into fifths ; a third of one of these fifths is the measure of the projecture for the fillet, which is the first member ; another third is to be given to the

Book II. little astragal that comes over it; the large ogee has one part, and a third projecture; the first face of the modillion has four parts and two thirds; the second has five parts; the quarter round above the modillion has five parts and two thirds; the corona has eight parts and a half; the ogee of the corona is to have nine parts and one third, and the great cinaife is to have twelve parts.

This is a medium between the excesses that have been made in the proportions and projectures of these several parts; the idea of the whole is taken from the entablature of the frontispiece of *Nero*. *Palladio* and *Scammozzi* having both the same entablature in view, and most others having followed them, there is little variation in the construction of this cornice.

The material difference is in the projecture of the corona; this, in the frontispiece of *Nero* is a fourth part of the whole cornice; *Palladio* reduces it to a sixth, and *Scammozzi* allows it only a seventh. Doubtless a true judgment is shewn in this reduction of the projecture, for its excess is a terrible fault: yet, in reducing this part, regard must be had to the rest of the cornice, which has induced us to give it a middle projecture between the several extremes, for, according to our rules, it is a fifth of the whole.

In the frontispiece of *Nero*, the modillion is only a fourth part of the whole cornice; and *Scammozzi* has copied this exactly. *Palladio*, on the other hand, has allowed it a third; and we have followed him exactly in this, for he shews a true judgment: we have observed that more freedom may be used in the construction of this than of any other order, because it is the least established of any; and it will be seen we have, in some measure, taken that liberty, though these projectures vary but very little from *Palladio*'s: that author's cornice for the *Composite* is, upon the whole, vastly preferable to that of *Scammozzi*, and it is more distinctive and peculiar; for in *Scammozzi*'s all the mouldings that are below the modillions are taken from the *Corinthian* order.

The authors who have written of this order, beside these two, have been sensible of the liberties that might be taken in it, and they have neither conformed to the precepts of those who went before them, nor to the practice of the antique.

The antient architects have, in the arches of *Titus* and *Septimius*, given the *Composite* order a *Corinthian* cornice; and we have seen what *Palladio* and *Scammozzi* have done by way of variation; and what is preserved in the frontispiece of *Nero*; but others depart from all this. *Vignola* gives the *Composite* a cornice very little differing from that of the *Ionic*: but this is injudicious, for that cornice is much too plain for so enriched an order; and *Serlio* and *Bullant* have erred yet more egregiously in this extreme, their *Composite* cornice is plainer and more homely than the *Tuscan*; all this is so extremely wrong that it needs no comment. Liberties are allowable, but these are all of the wrong kind; they should tend to lighten the cornice, these give it more weight. The squareness and nakedness of the modillions contributes greatly to the massy look and appearance of weight in the cornice; in the *Corinthian* these parts are cut with a scroll, and covered with leaves, which, to the eye, lightens them extremely. This should not be exactly introduced into the *Composite*, because it would be blending of the two orders, which should be carefully kept distinct; but any other contrivance that should have the same effect, would be very happy.

As

As the capital of this order is so extremely rich, the cornice must be embellished to answer it; in the frontispiece of *Nero* the great cimaise is decorated with carving: this is not common on that member, but shews the sense the antients had of the necessity of enriching the cornice in this manner, where the construction of the whole order made such decoration needful for uniformity. Chap. 15.

C H A P. XV.

Of the COMPOSITE pedestal.

IT has been observed already that the pedestals are to be appropriated to the orders, rising in height as the entire order to which they belong rises; and in the same manner receiving more mouldings as that order is more ornamented. From this we understand that the *Composite* pedestal is to be the loftiest and most decorated of them all.

As the *Tuscan* pedestal has at the base two mouldings, the *Doric* three, the *Ionic* four, and the *Corinthian* five; this has six: and in the same manner as the mouldings of the *Tuscan* cornice in the pedestal are three, and rise to six in the *Corinthian*, so they are seven, that is one more, in the *Composite*. In the same manner the increase in height is proportioned all the way.

Palladio orders the pedestal in this order to be of one third part the height of the column. For the proportion of its members he divides the whole height into eight parts and a half; of one part is made the cimafium of the base, and the die has five parts and a half; the base is divided into three parts, of which two are given to the socle, and one to its torus with the cimafium.

In a regular division of the parts in this order, the complete column, with its entablature, set on its proper pedestal, is forty-six thirds of its diameter high: of these the pedestal has ten, the column with its base and capital thirty, and the entablature six.

The base with its socle has, for its measure, a fourth part of the entire pedestal; in this there are six members beside the socle or plinth; these are first a torus, secondly, a small astragal, thirdly an inverted cima with its fillet, then a large astragal and its fillet, making a sweep to the naked of the die.

To find the height of these several members, the base without the socle is to be divided into ten; three of these are to be given to the torus, one to the small astragal, half a part to the fillet of the cima, three and a half to the cima, one and a half to the large astragal, and half a part to the fillet from whence the sweep springs.

The projectures are to be measured by fifths of a third of the column's diameter, one is for the large astragal; two and two thirds for the fillet of the cima; the projecture of the torus being equal to that of the whole base, which is the same as its height.

This

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This is an elegant and proper base for the *Composite* pedestal, but the remains of antiquity shew us great variations from it, and we see rules for working in a different manner delivered by some of the late authors.

In the arch of *Titus* the base of the *Composite* pedestal has ten members, among which there is a scotia; on the other hand, in that of *Septimius* it has but four members: it is easy to see that one of these has too many members, and the other too few. The base of the *Composite* pedestal in the goldsmith's arch has five members; this is between the two, but it is not really a mean between them; it comes too near the defect of number in them. In this base here directed there is something nearer a medium, which is all that could be attempted, for the exact mean would have given too many members; and we see a gradation begun from the lowest order, which here terminates regularly at the highest.

The cornice of the *Composite* pedestal is one eighth of the height of the whole, and it has seven mouldings; these are a fillet with a sweep over the die, a large astragal, a cima with its fillet, a corona or drip, and an ogee with its square or fillet.

To give these their proper measure, the whole cornice is to be divided into twelve parts; the fillet is to have half one of these parts, and the astragal one and a half; the cima is to have three and a half, and its fillet half a part; the corona is to have three parts, the ogee two, and its fillet one.

The projectures are to be determined by fifths of a third of the column's diameter, as before; the lower fillet, with the astragal above it, has one of these fifths; the cima with its fillet has three; the corona three and a third; and the ogee with its fillet has four and a half.

Thus is the *Composite* order set upon a pedestal proper and peculiar to it, and differing from the pedestals of all the other orders in the same manner as they differ from one another; the plainest having a plain and low pedestal, and the others rising according to the advance of the orders in height and ornament.

Having thus shewn the construction of columns of all the orders, we shall advance to the disposing them in the several parts of a building with propriety and elegance, but first shall conclude this part of our work with an account of pilasters, and of what are called the lesser orders. Pilasters are nearly allied to columns, and indeed differ from them in nothing essential, but that their figure is square, whereas that of the column is round. These follow the columns in their orders, and as they have been here explained in all their parts; the account of these pilasters will be circumscribed in very moderate limits. Of these we shall speak in the succeeding section, and afterwards of the lesser orders, and of additional parts and ornaments of the orders; so concluding what we propose with respect to the ornamental parts of buildings.

SECTION IV.

Of PILASTERS.

C H A P. I.

Of PILASTERS in general.

PILASTERS are a representation of columns in a square form. They are of all the orders, as well as columns, having the same capitals and other parts; and therefore, according to the order to which they belong, they are called *Doric*, *Ionic*, *Corinthian*, or other pilasters.

They are but a poor representation of columns, but their use is, in many cases, directed by necessity: the first thing the architect is to settle in his mind about them is this, that they are of the nature of columns, but, in every respect, inferior; he will therefore know that he is never to prefer them upon choice, though he is to submit to the use of them when necessity or propriety enforces it.

All architecture is founded upon what we see in nature; columns represent the trunks of trees, used first for the support of buildings; they represent these properly because they are round, but no trunks of trees are square. The angles of pilasters, while they deviate from the simplicity of nature, shew the defects of the art which founds itself upon her representation; their angles are sharp and harsh, and there is a flatness in their faces that gives a very disagreeable air to the whole.

We have observed that pilasters differ according to the orders to which they belong; that will be sufficiently understood by what we have already written of those orders; but they have also another kind of difference regarding their structure, according to which they strike the eye in a very various manner; this difference arises from the manner in which they are applied to walls, and this makes also a great difference in the effect of other columns.

Some pilasters stand quite detached and free; these are called *insulate* pilasters; others are joined to a wall at the corner; these have two faces free; and others are in part sunk in the face of a wall.

Book II. These are the three great distinctions of pilasters, according to their place and situation. Those that are immersed in the wall are sunk to different depths; so that they have only one face free, and a greater or lesser portion of two sides, according to the condition of their place in the wall.

We have observed that pilasters are but a poor representation of columns, and have cautioned the architect not to use them in wantonness, or without necessity. Of all the kinds that which is insulate, or quite detached from the wall, is the pilaster which he can have least frequently a necessity of using, and which is most likely to mislead him; columns, in most occasions might supply the place of pilasters, and they would always do it with a better grace, though somewhat more expensive; in this detached state they may most obviously supply the place, and therefore it is generally by choice, not from any necessity, that they are so used, and almost always wrong.

The antients are our best guides, they have been much more reserved in the use of these apologies for columns than we, for custom and a bad taste have at present rendered them too familiar; in particular, they were the most averse to the use of insulate pilasters. *Palladio* shews an instance of their using them in this way in the temple of *Trevi*, but they very rarely condescended to it; and even in that temple a judicious eye sees very distinctly in what manner columns would have been graceful. All their edifices were not erected by persons of equal taste and judgment; this is an instance. Pilasters are no where so proper as at the extremity of a porch, to give strength to the corners; these have three faces free, and are the happiest in their enactment of all the kinds of pilasters, because their place shews their use.

With respect to those which are immersed in walls, and shew only one face and a part of two sides, we make them more ungraceful than we need, by shewing too little of them. The antients used these occasionally, but they in general let them stand half out; we give them only a sixth or a seventh part free; this adds to that flatness and poorness which is natural to pilasters, and he would act with discretion and spirit, who, when he had these to use, should imitate the antients, and bring them farther out.

The use of pilasters always was a degradation of architecture, and the present custom of laying them in this manner flat upon a wall is an innovation, and one of the lowest and poorest kind: it is unworthy architects who have the remains of *Roman* edifices for their models, and who affect to admire them.

Notwithstanding the plain difference between these and columns, when they can be used indifferently, that of columns being always great and noble, and that of pilasters mean and poor, the taste for them is become universal: one would think some who call themselves architects were unable to execute a column, and, for that reason, had recourse to these to supply their place. There would be a double grace in columns on almost every occasion.

Not-



PILASTERS
in the Temple below TREVI
outside of Borch of PANTHEON



Pilasters where impost Join



impost

Notwithstanding these free censures of pilasters where they are used improperly, Chap. 2. we shall proceed to deliver the necessary rules for their construction, when they are introduced with more judgment, or arise from necessity.

C H A P. II.

Of the projecture of PILASTERS.

WE have observed that the antients, who had always spirit and freedom in their manner, in general threw the pilaster half its diameter out of the wall; and that this is its boldest, best, and most graceful projection: but this is not always to be followed. When the half would be too much, the sixth part will be found a proportion of projecture next in beauty; and nothing between these should ever be used, except in a case of necessity; no other projecture being nearly so well.

There are necessities which must supersede all absolute rules; for, neither in architecture, nor any other science, are there any rules incapable of exception: these necessities will sometimes compel even a good architect to be content with a much smaller projection than either of these. What they are we shall observe more largely when we come to the raising of a building; here it will be only necessary to observe that the complete architect, foreseeing this necessity of what is ungraceful, should in time take care to obviate the occasion of it. There is nothing that so much shews the complete workman as the having every part of his plan in his thoughts before any portion of it is reduced to execution: it was by this the architects of old time made themselves so famous; by this they foresaw all that would be ungraceful, and therefore admitted nothing but grace: by this they were enabled to proportion every part of every order to the whole building, by measures so small and singular, that they appear to us incomprehensible; sometimes what we thus see only measurable by strange fractions, was the effect of carelessness or error, but often it resulted from the first idea of the whole, which was always kept in mind, and to which they accommodated every the minutest part. There are buildings in which not a fillet, or an astragal, has its place or measure without a reason; it was in this the architects of those times principally excelled those of ours. Let him who would rival them, for it is not impossible, tread in their steps; let him preserve this general idea in the distribution and measure of every part; and in none more than in regard to these pilasters, because there is no article in which he is so likely to err, or in which the present practice sinks so vastly below theirs.

The smallness of the projecture is not always, though it is commonly, a mark of narrowness in the genius of the architect; we see instances of very small projections in the antique, but they are so conducted as to be yet graceful; the outside pilasters in the porch of the *Pantheon* advance only a tenth part of their diameter; and in *Nerva's* forum we see them only a fourteenth part free. Let the architect, whom necessity compels

Book II. compels to place pilasters where they can have but a very small projecture, consider how it is they are managed in those buildings.

Where pilasters are to receive impostes whose profiles come against their side, there is a general rule for their projecture; it ought to be a fourth part of their diameter: there will also be found a great convenience in this proportion; for the *Corinthian* and *Composite* capitals, in this case, need not be cut irregularly. The lower leaf, in this case, in both orders, is cut exactly in the middle, and in the *Corinthian* the stalk also is divided regularly.

On this account of the symmetry of the capitals, when half pilasters meet at the inward angles, they should always have something more than half their diameter.

We cannot but see that the frequent use of pilasters is an abuse of modern architecture, and is one of the greatest that has been introduced. But in this manner of managing them, and in a reserved use, they are least hurtful.

C H A P. III.

Of the diminution of PILASTERS, and the placing their entablatures.

IT has been said pretty confidently by an author who had taste enough to be a great enemy to pilasters, that *they were not susceptible of that diminution which makes one of the greatest harmonies in the column.* These are the words, but they have been put down a little too hastily; in order to understand the first principle of the doctrine of the diminution of pilasters, we must refer to that distinction we have at first established between their different kinds; among these, the principal sorts are two, those which stand naked and free, and are called insulate pilasters, and those which are immersed in part in the wall. The insulate pilaster, when it accompanies a column, is susceptible of diminution; the other which is in part immersed in the wall is not. This is the universal rule.

We cannot do better on this head than to recur to the practice of the antients; it is plain they understood pilasters much better than we do, by the grace with which they stand in their buildings, and the very ill effect they have in ours.

There are pilasters immersed in the wall of the outside of the porch of the *Pantheon*, and they have no diminution; on the other hand, we have instances in the antique of pilasters that stand in the same line with columns, and that have the entablature continued over both, without making any breaks, and then the pilaster has the same diminution with the column it accompanies, and to whose order it belongs. We see an instance of this upon the side without the porch of the *Pantheon*; in this case however the diminution of the pilaster must be made only on that face of it which respects the column, the sides having none. This we see practised in the temple of *Antoninus* and *Faustina*.

When a pilaster has two faces clear of a wall, and stands at a corner, and one of those Chap. 3. two faces answers a column, in that case the face which answers the column is to have the same diminution as the column. This we see in the porch of *Septimius*, where the face that does not answer the column is not diminished.

The antients, we have seen, on many occasions, often deviated from those rules which they seemed in general to hold the most established; and we have an instance of this caprice for we cannot call it better, in the present instance.

We see pilasters in the *Pantheon* which, upon these principles, ought to have their regular diminution in the same manner as columns, which yet have none; and we see others also in the temple of *Mars the Revenger*, where they ought to have this full diminution, and where they preserve a medium between the two other practices, and have a diminution, but it is very little.

We see in these pilasters also their method of placing the entablature upon them, when it is at the same time upon the columns, which is extremely proper and judicious; it is thus: they lay the architrave just over the naked of the column, which makes it recede somewhat within the naked of the pilaster.

This we see executed in the temple of *Mars Ultor*, and in the *Pantheon*, and this is their most frequent practice; but though their most common, it is not universal, for sometimes they divide the difference: they give the architrave a projection of half the odds beyond the naked of the column, and make it recede the other half within the naked of the pilaster: we see it thus in the forum of *Nerva*, and there is nothing absurd or shocking in it, but the other method is the plainer and the better.

Of the flutings of PILASTERS

ONE would think it natural that the pilasters which accompany columns should be fluted when those columns are so; but this is not an universal practice among the antique: it is from this source alone we can draw our knowledge of the management of these parts of architecture, and they vary greatly in the instances they afford us in their remains.

When the columns were plain the antients sometimes made their pilasters fluted; we have an instance of this in the porch of the *Pantheon*: and, on the other hand, we see the remains of buildings in which there are fluted columns, and the pilasters that accompany them plain. This we see in the temple of *Mars Ultor*, and in the porch of *Septimius*; this is more strange than the other.

Some have accounted for the not fluting of the columns in the portico of the *Pantheon*, by observing that they are not of white marble, and that the antients rarely fluted columns made of any other. This is a very right observation, but ought not this to have induced them also to let alone the flutings of the pilasters? No account, I am afraid, can be given of this but caprice. Certainly uniformity is destroyed by it, and there is no pretence of any beauty introduced in its place, to which it was worthy to be sacrificed.

When pilasters have less than half their diameter in projecture, there should be no flutings in their returns.

Reason would say that the number of flutings on the face of a pilaster should be equal to what there would be on such a part of the column; and there is indeed no other rule that can be established: but the antients have been as free in respect of this, as any other part of the management of pilasters. In the portico of the *Pantheon*, the flutings on the pilasters are seven; this seems therefore to have been the more settled and approved number.

It is a general and very proper rule that the flutings of pilasters should be in an odd number; but in half pilasters that meet at inward angles, four flutings are to be made instead of three and a half, where the whole pilaster has seven; and when the number on that is nine, five are used instead of four and a half.

The foundation of this is in very plain reason, for it is understood that the pilasters thus meeting in an inward angle, should have so much more breadth than half their diameter as may receive the even number of flutings we have mentioned; that by this means the architect may avoid the ill effect of the capital, which, being in a manner folded in the angles, would become too narrow for the due proportion in its upper members; in those capitals which have leaves this would be very inconvenient.

Chap. 5.

C H A P. V.

Of the capitals of PILASTERS.

THE capitals of pilasters are always to answer those of the columns they accompany, or to be made according to the capitals of those columns to the orders of which they belong. But to this general rule there is a natural and unavoidable exception, with respect to those capitals in which there are leaves. The breadth is necessarily greater upon the pilaster than on the column: their height therefore, in the same order, is the same, but the breadth is different. The leaves are wider, because pilasters being of much more extent than columns, have only the same number of these, which amounts to no more than eight for their whole girt.

In this however, as in other instances respecting pilasters, the antients have varied from their own rules; it is unquestionable by their general practice that eight was the number of leaves they allowed, but we see instances in which they have given twelve. Two of these are the frontispiece of *Nero*, and the baths of *Dioclesian*.

The architect sees therefore that he may vary the number in this instance, and by that means reduce the breadth; but the general practice, and common rule, is eight.

Having settled the number, the next article regards their disposition; this is also to be reduced to rule, although that rule will not be absolutely without room for variations. In the lower row, where there are the lesser leaves, two are to be given to each face, this making a regular portion of the eight, which form the whole circumference: in the upper row, there is, on the contrary, one in the middle, and two half leaves on the sides, which are half the great leaves folded back upon the angle.

In these capitals also the rim of the vase or bell is not strait, but rises circularly in the middle; in the *Basilic of Antonine*, this swelling is no less than an eighth part of a diameter of the column, and in the porch of *Septimius* it is a tenth; in the portico of the *Pantheon* it is only a twelfth, and this seems by far the better measure.

Book II. Upon these rules and principles the architect, whenever he shall have a necessity of using pilasters, will be able to dispose and manage them in such manner that there shall be no fault found with his performance; but all the while we must remind him, that the best and most judicious use of them is not so well as the letting them alone.

We have begun with cautioning him never to introduce them needlessly, and we shall conclude with observing that in most cases columns may be introduced in their places; and that wherever they can the practice is much better, and the composition greatly the more graceful.

SECTION V.

OF the FANCIFULL or LESSER ORDERS

C H A P. I.

Of the ATTIC order.

IT is in compliance with the common custom that we treat of these under the name of orders: but as it is usual to call them by that name, we must so far follow the beaten path as to describe them under that character.

This which is called the *Attic* very properly follows the pilaster, as it is a square pillar with its cornice, nothing more: it is therefore very little deserving to be distinguished by the same name with those great and judicious compositions, which have been the subject of the preceeding sections. As to the *Perſian* and *Caryatic*, they are little more than the effect of caprice, in the manner of *termini*; we therefore, properly enough, we hope, give them the name of fanciful orders. They have nothing of peculiar character or form, but are capitals and entablatures of one or other of the orders before-named, supported by slaves, by women, or by other figures, in the place of columns.

The *Attic* order had its origin in *Athens*, where it was for many ages a rule in building to conceal the roof. To this purpose nothing served so properly as a kind of low or little order, ranged in a continued line, singly, or with the interruption of balusters, which rising above the rest of the work, and before the roof, hid it perfectly, and placed something agreeable in view, where otherwise that part would have been seen.

This was the origin, intent, and design of the *Attic* order. Its place therefore is easily known and certainly determined; it is never to stand under any thing: its natural situation is at the uppermost extremity of an edifice, where it serves as a crowning to the building, or very happily makes a finishing for the other orders, when they have been used in the structure. The proper place and office of the *Attic* order is over some other, to which it is to serve as a crown.

Of the PERSIAN order.

AS the *Attic* may very properly be called a lesser, this may be justly denominated one of the fanciful orders. The thing is in itself a whim, a flight of licentious fancy, and owes its origin to an accident. It has an appearance of prettyness, but wants the two great characters of the regular orders, dignity and propriety.

The *Greeks*, in the origin of architecture, followed nature and convenience; the principal beams, and other parts of the wood-work, were to be supported by something, and for this purpose, the original invention was, as we have often had occasion to observe already, the trunks of trees cut to a proper length. This wood-work, supported by these columns of timber, they called the entablature; and, after a time, architects growing licentious, introduced figures of men in the place of columns, making them support the entablature upon their heads. This was the origin of this order; and its first use was to commemorate a victory.

Panjanias beat the *Persians* in a great engagement, and brought home spoils and trophies to the *Athenians*; they fixed upon the *Persian* dress for those figures which should support entablatures, and thus kept in memory that at one time *Persian* slaves were known at *Athens*. The policy was excellent; but much cannot be said for their ideas in architecture who devised this pretty conceit: however, when used on trivial occasions, and properly adorned, it is a caprice that is not without something pleasing.

This being the origin of the *Persian* order, people of that nation were the first who represented columns, and the *Greeks* being resolved to oppress the image of these conquered people, sufficiently, loaded them with the *Doric* entablature.

These figures were dressed in the *Persian* habit, and had their hands bound before them, and thus they stood in the most publick places, supporting the heaviest entablatures.

From this, which was the strict and exact design in the original, people in succeeding times gave their fancy a loose somewhat farther. It first became a custom to place over these *Persian* figures other entablatures as well as the *Doric*, and afterwards as a *Persian* was become too common, the habit of any other nation was introduced for the figure. Still however, they kept to the name, in order to perpetuate the occasion of the order, and called their figures *Persians*, in whatever habit, or of whatever character they were represented.

From

From that time fancy becoming more and more extended in this capricious order, symbols of virtues and vices were introduced in the place of slaves; as also trophies of love or valour. The heroes of the *Greeks* were occasionally introduced to support entablatures, and even their gods; *Hercules* stood under many a one; *Mars* was fixed to support an *Ionic* ornament; and nothing was more common than fauns, satyrs, and demi-gods. Chap. 2.

At this time we use, on many of the lesser occasions, figures of various kinds in this office. In one of the chimney-pieces in the succeeding part of this work, a couple of Cyclops will stand as *Persians* to support the ornament, in which is represented a story of *Vulcan*: and this is the way in which they should be appropriated, always making a part of the subject.

In general, when these figures, of whatsoever kind they may be, represent men, they are called *Persians*, and the order is called the *Persian* order; when they represent women they are called *Caryatic*, an order to be explained in the succeeding chapter.

This is a distinction very strictly observed among the judicious; all male figures, whether of men, heathen deities, or of the symbolical kind, are called *Persian*; and all female figures, whether of women, heathen deities, or graces, are called *Caryatic*; the common herd do not enter into this distinction, but use the two words at random, or rather employ the *Caryatic* for both.

One of them made himself famous by defending his error with an etymology; *Caryatic*, he said, was the name of any figure that had an ornament upon its head, for it came from the *English* word *carrying*, because it carried that part.

The student will see by this, that things must be understood before they can be remembered.

Of the CARYATTIC order.

FROM what has been just said of the *Persian* order, we see that the *Caryatic* is very nearly allied to it: when female figures are used to support an entablature, the order is called by this name; never properly otherwise.

This is, however, a much larger sense than that to which the original meaning of the word was confined; the order had its origin, like the *Persian*, on a particular occasion, and at first carried the marks and characters of that original, though in succeeding times fancy wanted in this as it had done in the other, and a multitude of figures, though all female, were used for this purpose, and all called *Caryatides*, and the work in which they were employed the *Caryatic* order.

The proper *Caryatides* are women dressed in long robes, and, in every respect, in the *Asiatic* manner; this corresponds with the origin of the device, which was this: The *Carians* had been long at war with the *Athenians*, but at length were thoroughly vanquished. The *Greeks* took their city, and led away their wives captives; this was a very signal victory as it put an end at once to a very troublesome war: and to perpetuate the event, trophies were erected, in which women dressed in the *Carian* habit were represented supporting the entablature, as the *Persians*; and serving in the same manner in the place of columns.

These women were called, after their country, *Caryatides*; but invention was let loose in a thousand other forms, and female figures of many other kinds were placed under entablatures: these were all called *Caryatic*, from the order whence they were first deduced, and thus it became a term expressing every female figure used for that purpose.

We use *Caryatides* sometimes now, but the idea of slavery in women is so improper, at least in our civilised times, that the hands are not ty'd before them, as they were in the old *Greek Caryatic*, nor do they resemble slaves in any manner. We use them as emblems of the virtues, and they have an air of great delicacy.

Thus we see the origin of these two fantastical orders; and from this account of them the student will understand to speak of them with propriety.

The architect, when he introduces them, should also have this caution, that he proportion the entablature not only to the size of the figure, but to the sex; in general, the *Persian* figure should support the *Doric* entablature, and the *Caryatic* the *Ionic* or *Corinthian*: nor is there any other in which they should properly be used; the *Persian* being a male figure, conveys some idea of strength, and should be used for the heavier entablatures; and the *Caryatic*, being female, should never be loaded with more than the most delicate. The robustness of the male figure also becomes the plainness of the *Doric*, and the delicacy of the female the elegance of the *Corinthian* ornament.

When

When a *Caryatic* is introduced, whatever be the occasion, the legs should always be brought close together: they may be crossed for variety, and it is very proper, and the effect very agreeable. The arms may be laid flat along the body, or they may be raised to the head, but they must be as little spread out as possible. As these figures support entablatures, and thus do the office of columns, it is always best to give them as near as possible, the figure and the form of columns. To this purpose, some cut off the arms, but this is wrong; it gives them a maimed and disagreeable appearance, and creates unpleasing ideas of wounding and mangling; it never can be necessary for a judicious architect to have recourse to this practice, for the laying their arms down close will perfectly answer the same purpose. Chap. 3.

When these figures, with their ornaments, stand insulate or free, they never should have any great weight to support; that would offend the eye, for their delicacy is not formed for it. As we see the representation of women, we carry in our minds an idea of the weakness of the sex; and the appearance of a load is easily taken off in a great measure when they are set against a wall, by placing a bracket over them; this is compromising the matter between exactness and propriety; doubtless, in the origin of the order, the women were intended to be loaded as columns, therefore exactness requires that the entablature should rest immediately upon their heads; but we sacrifice a little to propriety in removing or lightening it, for women are too delicate for such an office.

We have, in some degree, censured the *Greeks*, for introducing the *Persian* figures to this purpose; the same reason holds good more strongly against this.

It is from this consideration of the delicacy of the female figure, that we have advised the entablature they support should be *Corinthian*; that or the *Ionic* are the only proper ones, for the *Doric* is too gross, and the abundant load of ornament in the *Composite* renders it too heavy.

The antients used these figures frequently to support baskets of flowers, for which they are much more proper than for entablatures. We, in our churches, sometimes introduce *Caryatic* angels, but in this case they must always have the hands raised over the head, and hold up the entablature with them, for it must not seem to rest upon their heads.

These are the best rules for the management of these particular orders, in which the great part is left to fancy.

Of TERMINI.

THE *Termini*, or as we commonly call them in *English*, *Terms*, are so nearly allied to the *Perſian* and *Caryatic* orders, that it is a wonder thoſe who gave that important name to thoſe ſtatues or figures, did not continue it alſo to theſe.

The origin of theſe figures is very plain : there were places where the poſſeſſions of one perſon or family ended, and thoſe of another began ; theſe points of ground were the terms, or boundaries, of one or other poſſeſſion, and it was very proper they ſhould be marked in ſome manner, that they might be always known, and regularly determined.

Nothing was a more natural cauſe of quarrel than the diſpute about the term of the poſſeſſions : the antients, who erected every thing into a deity, and created imaginary beings of this denomination for their ſeveral purpoſes, were not long without a god of land-marks. This god they called *Terminus*, and as his office was to prevent diſputes between neighbours and friends, they placed an image of him upon every one of theſe points, or ſpots of land, where the eſtate or property of one perſon bordered upon that of another. The name of the god became familiar to the ſtatue, and theſe were called *Termini*.

This was the origin of this piece of architecture ; a mark was neceſſary, they plac'd the ſtatue of their god as this mark, and called firſt him, then his ſtatue, the protector of land-marks : there he ſtood always to watch them, and they made his ſtatue without feet, that he might not be able to change place.

This was the original of the *Term*, or *Terminus*, which to this day is the ſtatue of a human figure, or, if the reader chuſe, a heathen god, whoſe head and upper part only have that reſemblance, the legs being ſuppoſed incloſed in a kind of ſcabbard.

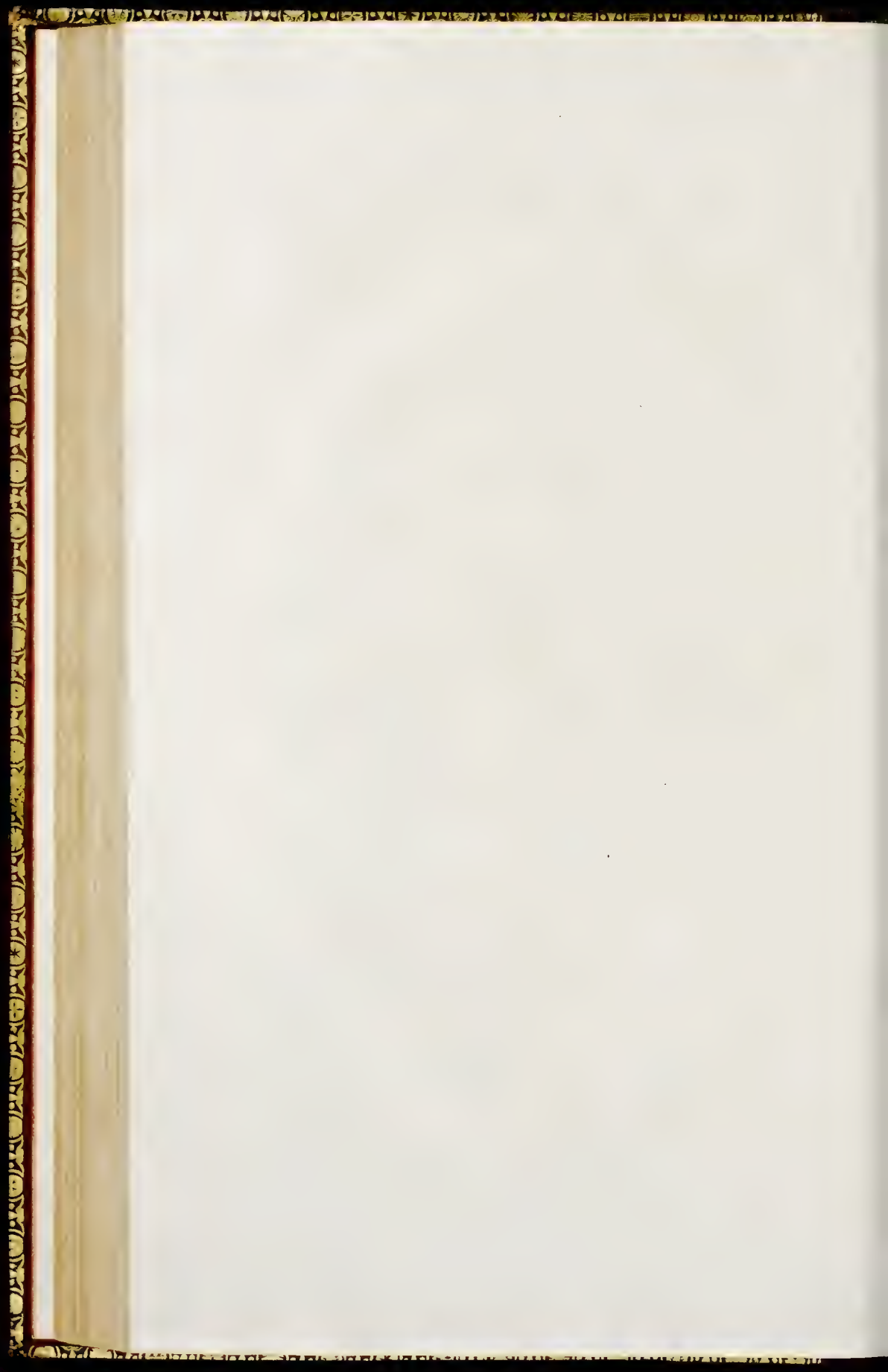
For uniformity, as there were no legs, they took off the arms ; and ſome retain the figure to this day.

It is a frequent ornament in gardens, ſome place them alſo in decorated rooms, to ſupport vases, or other elegant works : but its proper ſituation is as the boundary of lands. We have given the representation of one, placed as a mark of the boundaries of four counties, and dreſſed him in four forms, as ſymbolical of their produce. This may ſtand as an inſtance of the manner in which the *Terminus* may be uſed with elegance and propriety.

By this deduction of the origin of the *Terminus*, we find that it is properly a mixed figure ; in the lower part, ſerving as the *Perſian* and *Caryatic* orders in the place of a column, and decorated at the top with the head of a man, woman, ſatyr, fawn, or
other

TERMINI.





other device, supporting a capital of the *Ionic*, or some other order: the bottom part Chap. 4. represents a kind of sheath, into which the rest of the figure is received.

Some use this very representation in the place of a *Persian* or *Caryatic* statue, to support an entablature; but this is deviating from the intent of the inventors: as those two orders admit all male and female figures, there is scope enough for fancy in the use of them, without meddling with these, which are, or ought to be, peculiar to the purpose of boundaries. From the use of the statue of the god *Terminus*, at the boundaries of lands, the *Greeks* got into a method of placing that of *Mercury*, made in the same manner, in cross-ways. *Hermes* being a name of *Mercury*, and founding something like the name of this piece, some have fancied that thence was deduced the word *Terme*, which they would therefore have to be written *Therme*; but this is a conjecture that never could have had its rise but from a want of knowledge in the *Greek* arts.

Though the gods *Terminus* and *Hermes* were the only ones employed to this purpose by the earliest architects, the variety of figures introduced now is very great.

A double, treble, or quadruple face, is very proper on many occasions; and often we see the forms of angels and other figures very properly introduced. We have also rustic *Termini*, and those of many other kinds.

The antients had divisions of their roads into stadia, as we have into miles, and they marked the number or distance as we do upon stones; but they did not use plain square stones, to this purpose, but figures of this kind. We are justifiable, however, in this plain method, from the wanton mischief of our common people; they destroy the very figures which mark the miles upon these stones, and they would certainly demolish any kind of statues.

The figure most commonly used for this purpose by the antients, was that of *Mercury*, who was in a part of his office, the tutelar god of highways; and they frequently gave him, on this occasion, four heads. The statue at the end of the *Fabrician* bridge at *Rome*, is one of these four-headed *Termini*.

SECTION VI.

Of the DECORATION of the Orders.

C H A P. I.

Of the materials and richness of the orders.

IN treating of the several orders, we have taken occasion to observe that certain parts of them may be made plain or decorated; the freeze in particular, in most of the orders is thus left to the pleasure of the architect, and the same is the case with some other of the members. The decoration of these being arbitrary, we have preserved the consideration of it to a separate place, treating there only of what was essential.

The orders are in themselves very noble and very graceful; they make the great and the elegant part of architecture, but it is possible to add both to their dignity and beauty.

They may be enriched by carved work, or they may be made grander than in their natural condition by the use of costly and beautiful materials.

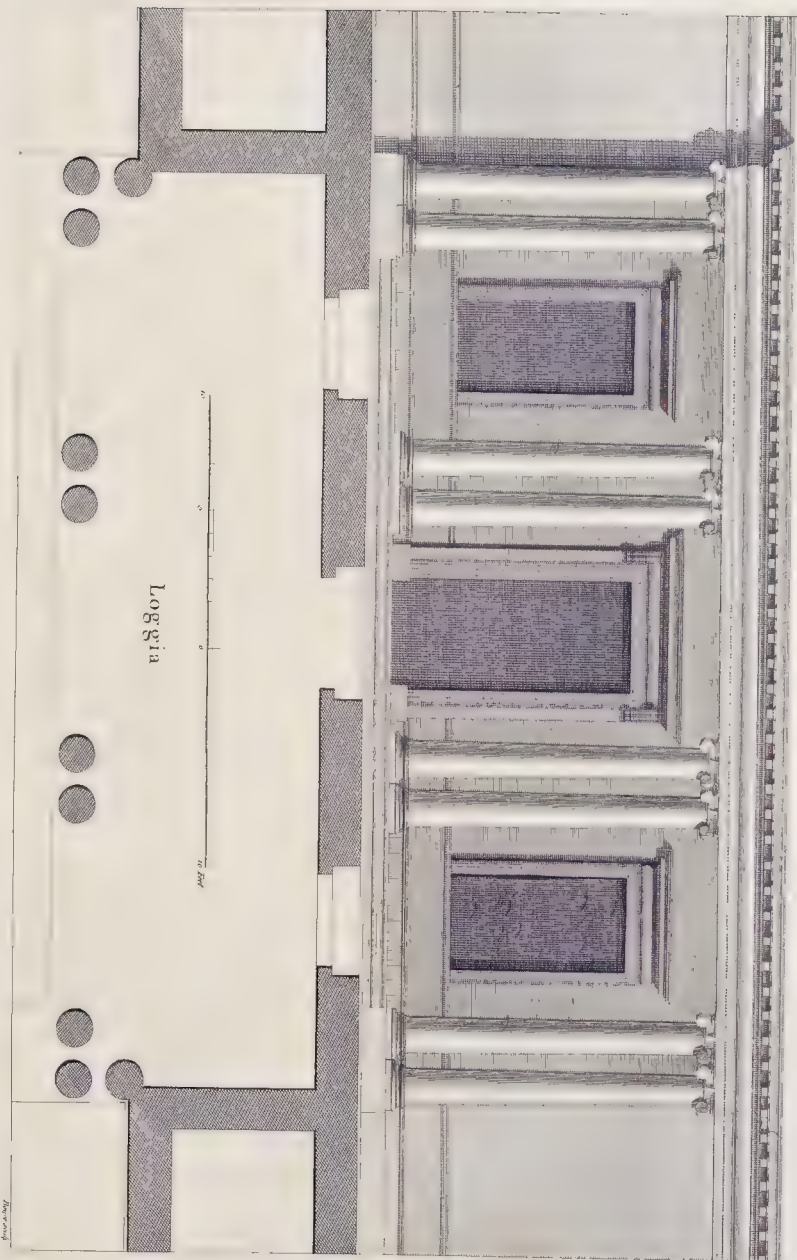
We see in *England* columns of wood, brick, or stone; the first are painted, the others remain in their natural condition. Brick is a material very much inferior to stone, but where the fine red cutting brick is used, when a good workman is employed, and it is set in putty, it is possible to make with it very fine columns.

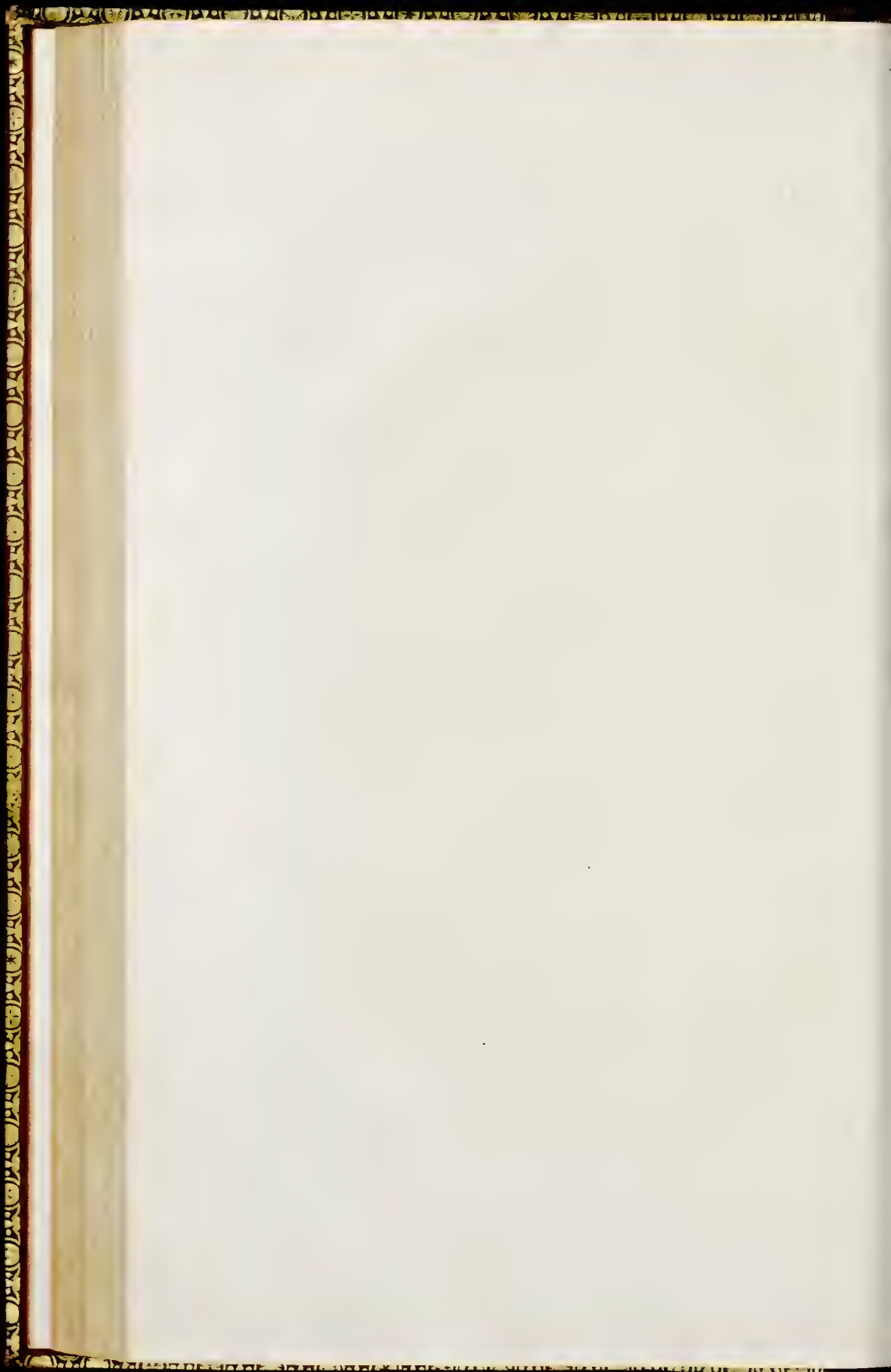
Of stone we have several kinds, as we have seen in the preceding part of this work, where we treated of the materials; and of these kinds the *Portland* is that which is fittest for this use. This may be understood as the marble of *England* in this respect: it is the best material we have at hand, and in sufficient plenty for columns.

The softer kinds are unfit, for though they work easy, the air takes a very certain and very fatal effect upon them; whoever would see, in its strongest light, the impropriety of using soft stone for columns, should look into the court-yard of *Somerfet House*. There are different series of columns there, and they are made of free-stone; the upper ranges are eaten away by the weather, the air has absolutely dissolved their substance, and they are mouldered to powder; at the same time that the lower order, though of the same materials, are very entire: they are as it were varnished by the smok, and the members of their several ornaments are as sharp as when first cut.

COUPLED COLUMNS.

Pl. 49





The sight of the upper ranges of these columns will be enough to warn the architect who builds to be admired by posterity, that he never employ such stone: at the same time he may learn by that example, that the same materials will last a long time entire in a low and sheltered situation, which decay presently in the more elevated and exposed parts of a building. Chap. 2.

As we have only these materials, the best of them of no intrinsic beauty or richness; *Italy* is happy in a profusion of marble. There ornaments and decorations of the additional kind may very well be dispensed with on many occasions, because the materials themselves give richness to the work; but with us it is otherwise: as we have not this richness in the substance, we have the more occasion to add it in the ornaments. These we shall treat of in a succeeding chapter, but shall first say something of the construction of the column.

C H A P. II.

Of the construction of the column, according to the different materials.

OF the materials we have for columns brick is fittest for very large ones, because of its softness, which would render the whole weak in a smaller bulk: Stone is fit for large, but may be used for the very smallest: and timber is also fit for various sizes, but there is a moderation in its use, for it is not to be used for the very largest.

The construction of the brick and stone columns is familiar; all that is to be observed particularly is, that the bricks be laid carefully and evenly; and that the stone have small joints.

As to timber there is more to be said: they may be made two ways, either of one piece, or of several joined and glued together. One would think at first consideration that those of one entire piece were best, but experience shews the contrary. They are liable to crack, and split; and this is a great deformity.

They begin cracking from the inner part, and, as our workmen express it, fly from the heart. This is in some measure to be prevented by boring them; but those made of pieces are not so subject to this accident.

We have occasionally spoken of the fluting of the shaft of columns; this is a part of their additional decoration, and we should be more free than the antients in the use of it, under the restrictions already given; that is, where the order is light, and the column stands aloft. The antients commonly fluted their columns when they were of plain white marble, but they very seldom did this when they were of the coloured kinds. We have no variety in the colouring of our materials, and therefore we should be the more ready to use this decoration.

C H A P. III.

Of the disposition of COLUMNS.

IT has been occasionally said already, that columns should stand detached and free. They always have the most beautiful appearance when placed in this manner: and although custom may have familiarized, or necessity may sometimes introduce the use of half and three quarter columns, they never strike the eye so nobly. But the greatest abuse in this respect is the making the columns penetrate one another; it is true that *Palladio* has done this in one of his houses at *Vicenza*; and he calls these double columns; but the work of the greatest man in the world is not to establish so monstrous a practice as right. Pilasters are more frequently made thus to interfere with, or penetrate, one another than columns, and the practice is equally bad; but in columns it is the more shocking because of the beauty that is destroyed. A very great article in the disposition of columns is the coupling them, or placing them in pairs; this is an invention intirely modern, we have not a single instance of it in the antique, but it is a modern thought that might have done honour to antiquity.

The antients were fond of small intercolumniations, so that it is a wonder the happy disposition escaped them; for at the same time that it gives a sufficient quantity of a very small intercolumniation, it varies the scene by introducing larger spaces between the several parts.

There is something that naturally gave origin to this practice in the plans of *Hermogenes*, who occasionally took away middle columns, or middle rows of columns: it is therefore wonderful that this thought, which the antients saw had so happy an effect in that instance, was not made universal.

In our method of coupling columns we make the whole more graceful than it can be contrived in any other way; and we give a freedom to the portico which the antients wished but never could obtain. This manner of placing the columns two and two, gives opportunity for keeping the intercolumniation between the several pairs so large, that doors and windows are clear; which could not be in the antient manner, as their openings were larger than the distances between the columns.

In the disposition of columns in an edifice of several stories, there always should be a range, or series, of columns to every story; and these must be so placed that the more massy orders be at the bottom, and the more light and elegant at the top.

• followed by many more examples.

The antients held this as an invariable rule; I shall not be so severe as to mention the names of those architects who have left us buildings, in which there is one great order comprehending several stories; but we see such: let the student set them down as things he is to avoid. Chap. 3.

The only thing in the antient architecture that could give any face or shew of authority for such a practice, is what they called their *Corinthian* courts; but these give only a face of authority to it, for we do not see any building truly of that kind. In these *Corinthian* halls the columns stood at some little distance from the wall, and supported the entablature, which served as a kind of pent-house.

These columns therefore, though several stories were seen behind them, did not belong to any story, but were a detached part of the edifice.

Our practice is to use half columns, or, what is still worse, pilasters which are fixed and immerged in the wall, and run up in a manner from the bottom to the top of the house, with several ranges of windows between.

We see very fine buildings in which this practice is followed; and we read very fine excuses for it: but all amounts to no more than this, that it is a fault, and a fault which sometimes bears the shadow of an apology.

Of ornaments of carved work in the orders.

AS the great harmony and beauty of a cornice consists in the mixture of round and square mouldings in a proper disposition, so the great art of adding the ornament of sculpture to the parts of the orders depends in a proper disposition of it, so that there may be a harmony and a variety from the mixture of some plain and other decorated portions.

Too much carving favours more of expence than of taste; and the adorning several members successively, one upon another, creates confusion.

The division of the members is often by small parts, such as fillets and astragals, but this division is very necessary: therefore the architect must take care that the sculptor do not drown or obliterate them, which is an error very easy.

One rule, as general as it is possible any rule can be on this head, is that two members should not be decorated with carved work together.

In all carved work that is added by way of decoration to the parts of orders, care must be taken that the out-line be well terminated, and very plain. Sharpness is an excellence in all sculpture, but here it is essential.

The figures must be properly chosen, and the great art is to give them an air of nature. To look natural, and lie well, comprehends almost all that is excellent in this article. We have of late fallen into a very childish taste in sculpture, and are introducing it apace, from the frames of looking-glasses to the entablatures of the orders. This is called the *French* taste, a frivolous people whom we are too apt to imitate. It consists in crooked lines like C's and OC's the *Gothick* is hardly more contemptible. Too many excellent pieces of architecture have of late been disfigured in this capricious manner.

This sort of carved work has got the most universal footing in the finishing of rooms; but let the judicious architect discourage it. The *English* are not without judgment: though they may be captivated at sight with foolish fancies, they will hear reason; let him tell them this is reviving the decorations of *Goths* and *Vandals*: they will find it true, and they will thank him for informing them.

Too much swelling in the rounded parts of carved work in these cases is to be avoided; it gives an air of massyness to the members of the orders, and this disturbs their proportions, they should always be left pure.

The best kind of carved work for the decorations of the orders, is such as is designed with simplicity, executed with accuracy, and has a middle degree of relief.

There is no article wherein fancy is so apt to run away with a young architect as this of sculpture added to his orders; but there is none in which judgment should be so perfectly consulted. He thinks it a great thing to give a richness to his work by something independent and superadded to his design: but nothing is so easy as to bury the merit of a design by this means; nor is there any thing at the same time which so much betrays an error. If we look into the freezes of the richer orders in the antique works, we see sculpture introduced in its greatest elegance; if we observe it in the *Doric*, the manner is more chaste, and the conduct more reserved: let this stand as a rule to the modern designer, that it is not sufficient the sculpture he intends be pretty, it must be appropriated: it loses half its grace if it want this article. There is a plain kind of sculpture proper for the *Doric*, there is a middle one for the *Ionic*, and a richer for the *Corinthian*; these should be preserved perfect and distinct.

If there be a subject on which fancy indulges with freedom, it is in the *Composite*; the very design of that is decoration, and we refuse scarce any thing that has propriety a place there. But, even in this, let the sculptor, or rather let the architect for him, take care that there be clear spaces between the enriched parts, otherwise all is cluttered, and the grace even of the carved work itself, is lost in the confusion that results from one part being blended with another.

Foliage is an excellent article of sculpture, and there is a source of endless variety in it, for half the beauties of nature are not exhausted: this kind of carving should always be a representation of nature, and we may send the sculptor to her school in the fields and gardens for an everlasting and unbounded variation. The leaves that are employed in sculpture are few, they are not of the most beautiful kinds that nature affords, and they are executed incorrectly; why should not the ingenious carver add to them truth, and a greater variety, when the models are so profusely thrown before him?

Of preserving the true proportions.

THE antients, as we have seen, in every order, worked with great liberty, and made great variations: all who have studied architecture have perceived this; for the measures of their several remains shew it, beyond the least shadow of doubting, to have been their constant practice. No man tied himself down to that strictness of measure our writers allot, and the builder of the *Coliseum* would, upon our principles, have been tried and found guilty.

We admire their works, full as they are of these liberties, and we have reason: for the great proprieties are observed, while this strict regard to the lesser has been neglected; and the whole edifice has been perfect, while these parts or members have been disproportioned.

People who get into a scheme of admiration do not know where to stop. The many venerate these antients so devoutly, that were not their senses convinced of these variations, they would never believe they had been made; and when they do see, and must own them, they will not attribute the least and most trivial of them to caprice, or accident, to carelessness, or chance, but will have the difference of two hairs breadths, in the height of an astragal, to have been made with reason.

It is plain that we see the proportions of the several orders varied in their different buildings, and these admirers of all their works, as they will admit not the least thing to have been done in them without a reason, have laboured hard to find one on this occasion. At length they have hit upon one very specious, but altogether false: they consider that columns placed at different heights affect the sight in different manners, and that there is the same effect produced by different distances: on this they build the explanation of these variations.

They say the old architects considered this, and adapted their columns to it; they tell us they perfectly understood opticks, and worked according to the laws of vision; that they considered what effect such height and such distance would have, and then fashioned their orders accordingly, varying their proportions, and that by the minutest differences, that they might appear to the eye the same.

This has a fine appearance, and seems to set the old artists in the highest light of glory; but it is not true that they had any such consideration in their thoughts, neither, upon a deeper examination, would it have been proper to follow it if they had.

We understand optics at this time at least as well as they did; and, upon bringing these changes of proportion to the test of that science, they are found not to answer the intent, so that if this was the design of the variation, it has been made ignorantly;

but, on the other hand, it must have been really a mark of weakness to have attempted Chap. 5.
 any such change at all. To alter the proportions is to render the columns defective, and as to those effects produced by height and distance, far from being faulty, or such as should be mended, they are the true condition of things; they are the condition in which the eye sees every thing, and which the mind, being accustomed to, sets right of itself.

The mind expects to be thus imposed on by the eye; and would be deluded if it were not so deceived: the making things right in this respect would make them appear wrong, for the mind has but one way of judging of all that is communicated by the sight, making its own regular allowances for distance and all its effects. To change these things therefore to suit them to the sight, is to make them visibly deformed; and can proceed only from an ignorance of the human powers and faculties; let us rescue the antients from this charge which their blind admirers lay upon them, and conceive that they often made those variations which we have described to suit the parts to the whole: not from any little notion of the effect of sight, but from a great and general idea that comprehended the whole structure; and sometimes from carelessness or accident. We have reason to believe that the first was generally the case, because the whole and every part are great, and are proportioned in most of their buildings: in these their variations appear to have been made with design, because they contribute to the beauty of the whole: in others they seem to have been the effect of carelessness or chance because they do not.

If the change of proportions were a practice established upon rules in their time, and depending upon so plain a science as optics, every architect would have known it; it would have been followed in a manner universally, and it would have been done regularly: but let us examine the old remains, and not one of these things is so. The change of proportions was not a universal practice among the antients, for we see the greatest number of their buildings without any such change; nay and the very noblest and most approved. Therefore it was not a practice established upon a known foundation, and followed by all. Indeed, upon examining all the remains we have of ancient architecture, it does not appear that this was either general or common; and the variations we have noted, which are the principal that remain extant, when examined strictly, according to what the rules of optics have determined, shew that they were not followed from any such rule: indeed the difference among these variations themselves shews they were not made from any rule at all.

If optics had given law to architecture, it is evident and certain that the diminution of columns would have been made different, according to the height or size of the column; but we have seen this is not the case. It is plain that there is vast variation in this diminution; but then, like all the other variations, it is done at random: we know how it must have been if optics had disposed it, and we see it is not so. This we have shewn already treating of that article.

Though we have shewn that this method of changing proportions for the sake of accommodating them to the sight, was not an established practice, yet we are to observe that it has been done; it was among those fantastical things that some few took in their heads, though it was not the general opinion, as these have pretended. It is lucky that we have these instances, for we see by them that it is wrong.

Book II. In the *Pantheon*, the pannels in the compartment of the arch are sunk, as it were by steps, in the manner of hollow pyramids. Now the axis of the pyramids should naturally tend to the centre of the cupola; but, for the sake of the view, they are made to tend to a point in the middle of the temple, at about five foot high from the pavement; therefore this axis is not perpendicular to the base of the pyramid, as it ought to be.

This is the change: now let us observe the effect. These hollow pyramids, in consequence of the change, appear from the centre below just as they would were one raised to the centre of the arch, and that they were all directed thither; but as soon as ever one goes from the middle this effect ceases, and we perceive the obliquity of the axis, and the defect of symmetry in the pyramids. This is absurd and shocking; it is plain therefore, that, in this instance, opticks are made a law to architecture, and we see the effect is very bad.

The sight is disturbed and perplexed at this; the mind would very naturally relish the defect if things were as they should be, because it is a defect in all distant objects viewed in different directions: so that the judgment of the sight is a reason why we should not change proportions. Unless we could make such a change throughout all nature, it is better we leave our own works as they are.

The moderns who fancied the antients did this universally, have been ready enough to follow them; and we see, by the ill success of what they have done, that the thing cannot be proper in itself. In the court of the *Leuvre*, the *French* architect has made the figures in the base relief of the *Attic*, much larger than they are below; this he thought was accommodating them to sight, at the expence of absolute propriety of proportion, but he should have left them as they were, for what he has done offends every eye that looks upon it.

We err in supposing the senses so apt to deceive us. We know the manner of vision, but we should consider there is that within which sets us immediately right; this effect is so certain, because it is exerted on every occasion, that it never deceives us; and is so instantaneous, that it is not true we are at all imposed upon. Even brute animals are not deceived by their senses. Who ever saw a bird deceived by a piece of perspective? From the whole therefore, those architects who shall accommodate their proportions to the laws of opticks, will deceive the sight; and no others. They will do by their caution what they only imagine might have been the effect of their carelessness.

From these instances in nature, and the effect of what has been done with a view to perfection in this art, we shall find that there is no reason to alter proportions in architecture in respect of height: that the proportions being in themselves things fixed, we spoil when we alter them with a view to mend them.

After this review, we shall be bold enough to determine, that the change of proportions, in respect of the laws of opticks, is always wrong; and that although it has been authorised by a very great name, and rules have been prescribed for the manner

of executing it, it should never be done: the only reason that so false a doctrine has remained so long unshaken is, that none have sufficiently considered it. Chap. 5.

Though sight be an effect of sense, the conception we form from it depends upon the mind; when infants, very likely, our sight deceives us, but its delusions are so regular, that as we grow up we become perfectly acquainted with them; and we are deceived by them no longer. We expect things to be represented otherwise than as they really are in respect of their distance, and we judge of them accordingly; therefore when they are made properly we never fail to judge of them as they are: this perfection in architecture consists in proportion, and we never are deceived with respect of proportion, but when the architect has been too careful to prevent it. The understanding perspective is a thing, of the utmost consequence to the architect; but let him take care that he do not deceive himself in following its rules, in respect of the absolute proportions of essential parts. It will result from the whole, that the proportions of architecture are not to be altered in respect of the different points of view.

The proportions of certain parts may, on some occasions, reasonably be changed, but this not with respect to opticks, but upon a much greater principle.

When we wish not to give much projecture to a cornice, an architrave, or a pedestal, the faces may be made leaning back; and in that case we regain what we give to the projectures. In this reasonable practice opticks have nothing to do, for all the projectures really have their due magnitude, and there is no design of making them appear otherwise than they are; this practice is fittest for concave parts, as the domes of churches and the like; in general, in those cases where no angle is made at the return, may shew the profile of the moulding. There are examples of these faces leaning backward in the *Pantheon*, and they have a very good effect.

A colossal statue that is to be placed on some high place, is made of an enormous size, but this is not with respect to opticks; for it is intended it should be understood to be a colossus. In fine, let things be as they would be, that they may appear as they should be. The eye will never deceive us if we do not first deceive it.

Of the place of the Composite order.

IN treating of the orders, their characters, proportions, and gradations, we have left it dubious what should be the place of the *Composite* in edifices where many orders are used.

The common architect will answer immediately, that it is to be uppermost; and he almost despises us for making it a question: but the matter is not so soon determined.

No body understood the *Ionic*, *Corinthian*, and *Composite* orders better than *Scamozzi*, and those who are so positive as to the *Composite* having the upper place, are to be told he placed it below the *Corinthian*.

There is great reason for such a practice, and we apprehend that, upon a full consideration, no person of sober judgment will dispute it.

Beside the *Corinthian* being lighter, which ought to place it higher, we are to observe that there is an affinity between the *Ionic* and *Composite*; and therefore they should not be separated by any other order. The entablature of the *Composite* is also vastly grosser and heavier than that of the *Corinthian*, and that is another reason why it should stand under not over that order: it may be very proper that the light order of the *Corinthian* should be supported by this, which is in every respect heavier; but it cannot be judicious that the light *Corinthian* should support an order heavier than itself.

The richer orders naturally come over the plainer, and the lighter over the heavier. The *Greeks* left no possible dispute on this head among theirs, for the richest were the lightest; those who added the *Composite* wanted that strict judgment: they have made a heavier order more rich than one that is lighter, and thence raised the doubt of its place. But this is easily answered, weight is of more consequence than ornament, and when a heavier order is the richer, it must stand under the lighter, notwithstanding all its decoration.

The architect who dares think for himself, will see the reasonableness of this advice, and follow it; but it is not to be followed rashly: we have shewn what is to be done, and it is fit we tell how.

To this purpose, let there be some alteration made in the proportions and other respects. The way in which it is best done will be this.

Let the *Composite* column be placed between the *Ionic* and *Corinthian* upon the *Corinthian* pedestal; let it, in other respects be entire, except for a little shortening of the shaft: let this be shortened by two thirds of a diameter. Thus the *Composite* will
be

be only reduced somewhat in height: it will have its capital and entablature perfect, and it will stand upon a something lower pedestal, which will also agree better with it being thus shortened in the shaft. Upon this let the *Corinthian* be raised in its true and exact proportions, but set upon the *Composite* pedestal: this will give it an air of lightness proper for its position, and sufficient for its purpose. *Perrault* proposes in this case to lengthen the shaft of the *Corinthian* column two thirds of a diameter, as he reduces the *Composite*, and certainly this will give it a yet greater air of lightness and distinction, but it will do without.

We have observed that the *Composite* is an order with which great liberties may be taken; but we are for stricter adherence to rules with every thing that is of *Grecian* origin: it is therefore we propose to leave the *Corinthian* order, in this case, unaltered: the alteration of the pedestal does not affect the order, that being an additional part, and the order perfect without it: but farther than this we should not go in a case of that nicety.

The *Composite* order is in itself so much heavier in the capital and entablature, that it stands very well under the *Corinthian*, and this reduction of the shaft is sufficient.

We have shewn in a preceding chapter that it never can be necessary or proper to change the proportions for the sake of opticks, but here is an instance that there are occasions on which they may be changed, though they are of another kind; no matter what custom or the common practice assert, these are the determinations of reason.

We have seen the error of changing proportions on a wrong principle, we cannot be too careful to avoid that; and it may be a very good, and here perhaps a needful caution, that the architect be not led too hastily to change them upon better principles. The *Greek* orders are a kind of sacred text, they should be preserved in perfect purity; the freedoms should be with the *Roman*.

Of the decorations of the DORIC freeze.

IN treating of the *Doric* order, we have observed the great difficulties the architect labours under in disposing his work, because of the restrictions laid upon him by the form of the triglyphs and metopes. We have observed that ordinary architects made no difficulty of this matter at all, because they saw nothing of this restriction, but enlarged and curtailed the divisions at pleasure.

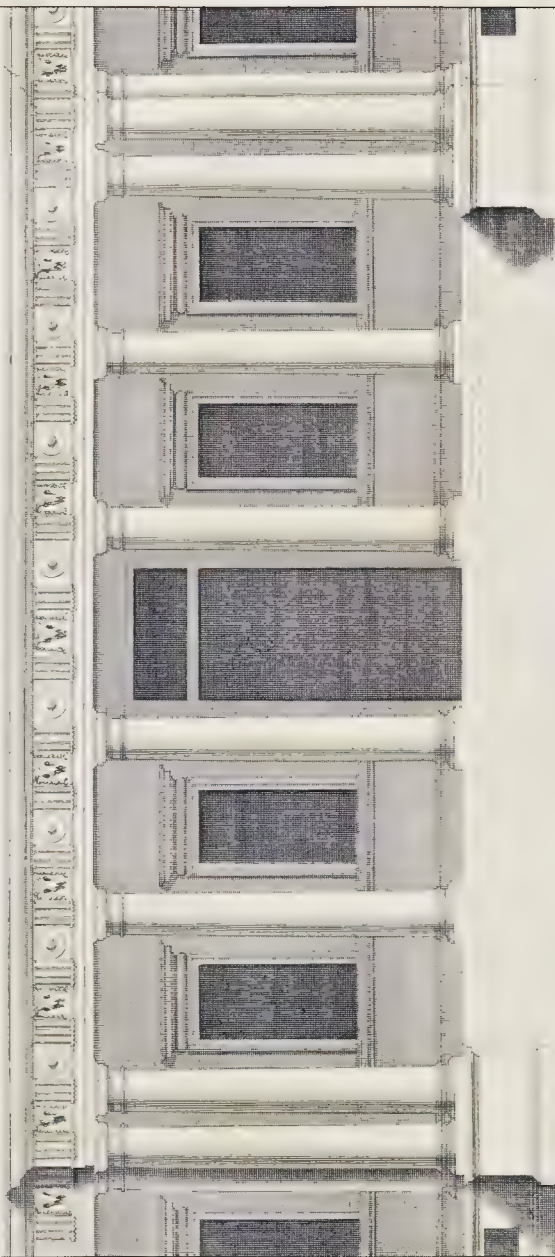
Others, beside the common, herd, have sometimes ventured to enlarge the metopes in this freeze, in order to obtain such a breadth as was wanted in the intercolumniation: but the thing is in itself wrong, and no authority can support it: If we see the greatest name produced to countenance such a practice, we should answer all the proof this brings, is that the greatest may do wrong.

If, in the *Doric* order, the architect is desirous of coupling two columns, he will find it necessary to enlarge the metopes, and set the triglyphs farther asunder. The space between the middle of one triglyph and the middle of another being much less than between the middle of one column and the middle of another, however near they shall be placed; this creates a difficulty in the coupling of *Doric* columns, but, on the other hand, the use of coupling being to give a large intercolumniation between pair and pair, and the *Doric*, as a massy order, bearing naturally a sufficiently large and open intercolumniation, this difficulty is in a manner removed; for as the construction of the freeze makes coupling of these columns difficult, their own large space, proper to the order, makes that coupling unnecessary.

It will be said by those who will couple the *Doric* columns, that their natural distance is not sufficient, and that, when coupled, a change in the form of the metopes is necessary. They should be answered, that the antients were very cautious not to make this alteration: we find that *Pythias* and *Tarchesius*, two of the famous architects of antiquity, because of this restriction of the freeze, which they would not alter, declared the *Doric* order unfit to be used in temples. The character of *Hermogenes*, another of the most famous among the old architects, was, that he took great freedoms with what were called the established laws of the three orders; but he never went so far as to enlarge the metopes of the *Doric*; on the contrary, he, solely to avoid the necessity, changed the whole order of his temple of *Bacchus*, making it *Ionic*, though his original design was that it should have been *Doric*.

We produce these instances of great men, and bold men in their way, declining the use of the order rather than they would enlarge its divisions in the freeze irregularly, to shew, that when the architect sees there is a necessity of enlarging the metopes in coupling *Doric* columns, he should not enlarge the metopes, but let alone the coupling of the columns.

*— Part of the lower story of the Palace of Count Fabrizio Colonna at Vicenza built by
Alghedio.*



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Palladio will be quoted as an authority that these metopes may be enlarged under Chap. 7. this kind of necessity, and the palace he built for count *Valerio* will be produced as an instance; it is true that in this palace he has, according to his own account, enlarged the metopes in the middle intercolumniation of the portico to make it somewhat wider than the others, which have only two triglyphs; the sole reason he has had for this plainly is, that he would not enlarge this middle intercolumniation so much as to make it receive three triglyphs, though he would have it larger than the others which had two.

We see the occasion, and we see what he has done. We can say nothing more on this head, than that it is pity he has done it: for the example of such a person is dangerous. We have shewn *Hermogenes* would not have done it, and he was a greater architect than *Palladio*, or than *Palladio's* idol *Vitruvius*; and as bold as a good architect ought to be.

In this *Palladio* not only played with the proportions, but differed from the opinions of his master. *Vitruvius* has named this incident of the enlarging the middle intercolumniation in *Doric* porticos, and his rule is absolute; he says let them be large enough to receive three triglyphs: he puts in this order three triglyphs in the middle intercolumniation, though the others have but one.

It is not only this liberty *Palladio* has taken with the *Doric* ornaments in that palace; he has put half triglyphs at the inward angles, and, upon the whole, has so greatly varied upon the proportions in this respect, that nothing but its being his work could protect it from much censure. It is not fit any name should make error sacred; the young architect is too apt to be misled by his own fancy, it is not at all proper he should have such examples.

As this is a point of great importance, we have given the lower part of that palace in the annex plate, to explain these observations.

Of the general proportions in the orders.

HAVING entered thus at large into the particularities of the several orders, their beauties and defects, and the excellencies and errors in their construction, as it has been delivered by different writers, we shall conclude this part of our work with some few general observations. The subjects of many of these we have occasionally touched before, but could not there dwell upon their explanation: we shall here, in one short recital, present them to the reader, in which manner they will illustrate one another.

Treating these subjects in this order, we divide the sources of knowledge into three parts; these furnish three distinct kinds of information. They are understood by the three terms, antique, antient, and modern: by the antique is meant what we learn from the remains of the most early architects; the antient architecture is that taught by *Vitruvius*; and the modern is that of late authors. This science, among others, slept during the middle ages, and was revived at the time of the others, so that what is called modern takes in only the writings of a few centuries.

The words antique and antient are frequently used as synonymous, and indeed they signify the same; but they are to be used as thus distinguished and appropriated when we speak strictly.

In the measuring the several parts of an order, it is seen we in the same manner appropriate terms. The word *part* is frequently used, and has no fixed signification, but, according to the division first established it is of one quantity or another: this is the variable, as the minute is the fixed measure.

A module is the general term used to express the diameter of the column, taken at the bottom; and a minute is the sixtieth part of this diameter: therefore a minute is a different absolute quantity in the measure of different columns, but it is always the same proportional quantity, being always a sixtieth part of a known measure, which is fixed with relation to that column.

A part is altogether a vague term, taken in itself; but being first settled as to its quantity, it does as well, and becomes as fixed as any other. Any measure, whether it be the diameter of a column, the height of an entablature, or whatsoever, is divided into a certain number of equal portions, five, six, eight, or more or fewer, and each of these is then called a part absolutely in the admeasurement of the several members. This we have shewn occasionally, but the reader being acquainted with these things before, will not be displeased at our leaving here it fresh in his memory; and he will find by this that he has properly understood what he has been reading.

The antients and the moderns have both occasionally used each of these measures in Chap. 8. describing the proportions of members; but, from the more general use, the measuring by parts has been called that of the antients, and that by minutes the manner of the moderns.

We have named both to give the student his choice, but we recommend to him the antient method by parts, for it keeps up a knowledge of the proportion at the same time with the remembrance of the measure, and it is much more readily and securely retained in the memory.

It must be allowed, that in giving the measures of several of the particular remains of antiquity, it is altogether necessary to use minutes, because the members to be measured are so irregular that scarce any division of parts can explain them; at least, none but what would be more perplexing than that of minutes. Reasons have been pretended for this, but more probably it has been often the effect of accident or carelessness: however this renders it most proper to use the admeasurement of minutes in describing some of the antique remains: but the use of parts is vastly preferable in delivering those of the absolute members of the orders, or conveying any other general knowledge.

Although the diameter of the column is what is generally expressed and understood by the term module, yet the word has other senses. When speaking of the *Doric* order, it means half the diameter of the column; that is, it is a measure containing thirty minutes; and *Perrault* has a module that contains still less: it is only a measure of twenty minutes, or a third part of the diameter of the column.

Vitruvius reduced the *Doric* module to half, because that was a more convenient measure for the parts in that order; and *Perrault*, who has added a third kind of module, distinguishes them: he calls the diameter of the column a *great module*, the semidiameter a *mean module*, and the third of the diameter a *little module*.

As this may however occasion some confusion, it is always better to use the express terms, a diameter of the column, a semidiameter, and a third of a diameter: these cannot be mistaken, whereas the other word, having three senses, may; and this is the method we have followed even where we have been most obliged to that author, as we have been, in the greatest degree, on a multitude of occasions; not using his term of module, mean module, or little module, but expressing ourselves by the whole diameter, or its ascertained parts.

This measure however, of a third part of the diameter of the column, taken at the bottom, has very great use. It determines the general height of pedestals, columns, and entablatures, in all the orders without a fraction. The height of the several parts are very happily expressed by this measure in whole numbers; and it serves also very well, under an appropriated division for their projectures: this division is into five, and

Book II. it is this we have used ; though without the term, to prevent confusion. A fifth part of a third of the column's diameter is as regular and plain a measure as the third itself, and it answers all these purposes. Six of these thirds, that is two whole diameters of the column is the general height of the entablature : this therefore, speaking generally, is as well expressed by the whole diameter, as by any division of it ; but when we come to the shafts and pedestals, they vary by such proportions, that this diameter, or even the half of it, is too large for a convenient measure. Here the third part comes in very happily : making the orders increase in height as they become lighter, their pedestals rise in an excellent proportion, by adding one *third* to the height all the way ; making the *Doric* pedestal one third of the column's diameter taller than the *Tuscan*, and so on.

In the same manner the columns will rise one above another regularly by the proportion of two of these thirds, the *Ionic* being two thirds of a diameter of the column higher than the *Doric*, and so on. This is a regular measure, and we see that a whole diameter, or a half diameter could not supply its place.

This kind of general admeasurement is very happy also in another respect, which is, that it is easily retained in the memory. Thus he who has been acquainted, that in pedestals in general, the base is a fourth part of the height of the whole, and the cornice an eighth, and that the fœle has two thirds of the base itself, will never be at a loss for the division. He has seen the height of the whole pedestal determined before, according to the order whereto it belongs, and he here sees the proportion of all its parts, for the measure of the die is the remainder of the whole.

In the same general way he will remember that the bases in all the orders are of a regular measure which is half the diameter of the column, and that their capitals vary, as also the parts of their entablatures ; these variations he is to seek in the particular accounts of them, and here is a general idea of the whole.

We have observed that the entablatures may very naturally be made equal in all the orders ; but there is nothing so little determined by the practice of the antients, or writings of the moderns, as this very article. The heights of their several parts are very differently adjusted, and the height of the entire entablature, in proportion to the column is a thing as little settled.

If we would see how undetermined the antients were in this point, let us cast our eyes upon the entablature in *Nero's* frontispiece, and that of the temple of *Vesta* near *Tivoli* : one is twice as high in the proportional measure as the other.

It is pity this is not better determined, for there is no part of architecture in which excess or defect are more conspicuous, even to a common eye.

Solidity and strength are to be the first consideration in every building, and the parts must be so proportioned as not only to have strength, but to shew that they have it : now, this is impaired where the entablature and the column are not proportioned to one another, either by the entablature being too heavy or too light. The column must have a certain thickness to bear this ornament, and there must be a proportioned height in the

the entablature accordingly. The entablature therefore is to be governed in its height Chap. 8. by the thickness of the column, being lower as that is slenderer, and higher as it is more massy. This is the direction of reason, but if we were guided singly by particular instances in the antique, we should run directly counter to it. We see, in the *Corinthian* and *Composite* orders, entablatures much higher, in proportion to the thickness of the column, than in the *Doric* and *Ionic*. To speak with that freedom which becomes a candid and free examiner, the antients seem to have exceeded in the making their entablatures too large and high, and the moderns, on the contrary, to have seen this, and become faulty in the opposite extreme. The entablatures in *Nero's* frontispiece, and the *Campus Vaccinus*, seem too high to be supportable; and, on the contrary, we see those of many of the moderns poor and pitiful because of their lowness. These first have seen the error of the antique, but it is seldom men can avoid one extreme in shunning another. It seems that the oldest buildings we know were too low in their entablatures; these were *Greek*: the *Romans* saw this, and carried theirs to too great a height; the moderns, avoiding that excess, are getting down to the practice of the first *Greeks* again, or, perhaps, beyond it, in their low entablatures: so difficult is it to find, and so much more difficult to preserve, a medium.

We have always advised this medium where there is the greatest diversity, and probably no way can be better here.

Having mentioned the more considerable parts, we shall now descend to the least important, for there are none utterly below notice. The cinctures belong as regularly to columns as their base or capital; but, because small, they have been less considered.

These represent those rings of iron the antients put about their original wooden columns, and consequently their proper place is at the bottom and the top. The cincture at top is usually an astragal with its fillet; that at the bottom is a plain fillet, and has the name of cincture by most given particularly to it.

These are parts the antients have treated as of very trivial consequence; and they have varied in their proportions greatly, without any visible reason. We see the same diversity and uncertainty in the moderns; but nothing should be left thus at random in the orders: the least parts should be ascertained.

There seems no great reason for varying these cinctures according to the orders, but if any one should determine upon doing this, the manner he is to observe is plain: they must be larger in proportion as the order is more gross, and smaller as it is more delicate. Without this strictness, it may be very well to give them one general measure, and this will have a very good effect, if given to all the orders, for it favours too much of littleness in taste to vary such parts. As the orders rise in delicacy, the columns lengthen, and this will make the cinctures appear less in the more delicate, and larger in the more gross, though they should be, in reality, the same in all; the measure of these things being proportional.

Book II. We may, at a medium, allow the cincture a twentieth part of the diameter of the column. In the *Pantheon* we see it about this measure; in the temple of *Antoninus* and *Faustina* it is higher; and in that of *Vesta* at *Rome* lower: we are therefore here happy in having an instance of the antique to support the medium.

Instead of this plain fillet, there is an astragal and its fillet on the columns in the *Campus Vaccinus*; and some of the moderns have imitated this: but the plain member is better. It makes a diversity between the termination of the shaft at top and bottom; and it seems to have more firmness.

The astragal at the top should be about a tenth part more in height than the plain cincture at the bottom; we may very well therefore allow it an eighteenth of the diameter of the column. We see it of this measure in the temple of the *Sibyl*, and the *Basilic of Antonine*; and this is a medium between the extremes in which we see it in the temple of *Fortuna virilis*, where it is half as high again, and that of the temple of *Vesta* at *Rome*, where it is scarce half so high.

This admonition is the more necessary to the student from the diversity of rules he will find in modern writers: *Serlio* making scarce half so large as *Palladio*, and so of the rest.

There is a proportion for the astragal established in the *Ionic* order, as we have seen, in which it is to be equal in breadth to the eye of the volute. This is about the measure we have given, and being settled in one order, there is no reason it should not be extended to all the others.

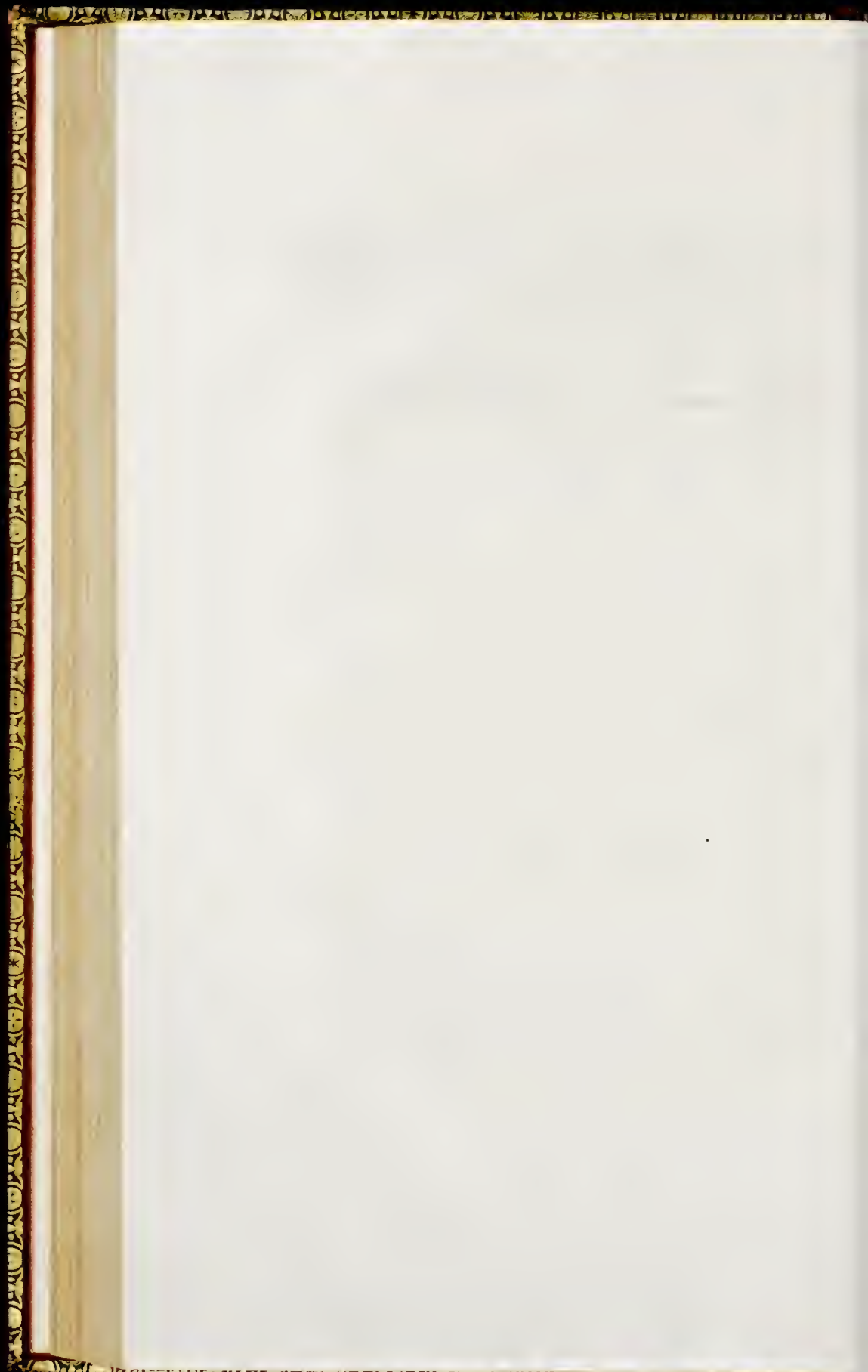
In the same manner the cincture at the bottom of the column is determined in the *Tuscan* order to be a fifth of the upper half of the base. This makes it a twentieth of the diameter of the column, and there can be no reason why this proportion should not be also made general.

Finally, the fillet of the astragal is half the height of its astragal in the temple of *Bacchus*, and some other antique structures. This is a certain and a regular measure, and nothing can be more proper than to make it universal.

Having thus, after a particular detail of the parts, and their measures in each order, given this general review of their proportions in general, and with respect one to another, we shall close the account of this great article in the science of architecture; concluding with that caution to the student wherewith we set out, and which we have so frequently inculcated in the course of these observations; that, when he has seen the variations in every article, he settle to himself a mean, or middle proportion, as a standard between them; and, when he has done this, that he compare that measure of construction with what is prescribed by one or more of the celebrated authors. We instance *Palladio*, doubtless the first of them in merit, as the first in reputation in *Britain*.

Let him not be captivated with the name even of this author, or over awed by his reputation: but examine what he proposes as freely as if it came from another. Chap. 8.
If he find it better than this medium which he had drawn from the various excesses of others, let him prefer it in practice; if otherwise, let him consider whether the exact medium, or some measure near it, be most excellent, and having found what is best, let him not be afraid to use it.

We have shewn him *Palladio* can do wrong, and that may be an answer to such, as, being bigotted to his opinion, would give it their voice against truth. *Palladio* is oftener in the right than any man, and let that be esteemed sufficient praise: no man is always.



B O O K III.

S E C T I O N I.

Containing the general practice of ARCHITECTURE, in the erecting of complete edifices, and proportioning and decorating their several parts.

C H A P. I.

Of preparing for the regular certain and unobstructed discharge of water.

WE have, in the preceding part of this work, laid down the principles of architecture, and prepared the student for the practice of it, by giving him a general idea of all its parts: we now advance to that practice; in which we would have him, according to the spirit and meaning of every article of instruction here laid before him, indulge his genius within the bounds of discretion: he has here before him the precepts of all the great masters, and the most eminent examples left by the celebrated architects of those earlier ages, wherein the science reached its greatest perfection. Let him imprint the one upon his memory, and retain the other in his imagination; and let him follow both without being a slave to either.

The rules delivered by authors are generally too strict, and the variations made by the antient architects are, in some instances, too licentious. If he conform himself wholly to the one, he will be cold and stiff in all his designs, and if he think he may run all the lengths of the other, he will be too free. There are certain deviations from rule upon which depends, in a great measure, the spirit of writing; but there are liberties taken by the *Homers* and *Shakespears* of an earlier time, which, though allowed in them, would bring censure upon any one who now should presume to use them.

Architecture, as we have shewn, is not less a science than poetry, nor is less a theme for genius; the rules of the one may therefore be transferred into the other: and it is by observing that conduct which has been successful in the one, that we may be certain to succeed in the other.

Our student now, if he have read with any degree of attention, is master of the usual terms, and comprehends what may be called the rudiments of the science; he is

acquainted with the nature and qualities of his several materials; he knows which are fitted for every peculiar piece of service, and he knows the theory of the essential and ornamental parts. Nothing remains, but that he now proceeds to the putting them together in the regular construction of an edifice.

That he may find no difficulties in his first advances in this way, and may proceed by the proper gradation, we shall begin with plain and small houses, and from these rise gradually to the larger, more elegant, and more ornamented. But as no house, not even the smallest, can be conveniently fitted for the inhabitant without a proper discharge for refuse water, we shall lead him to the erecting of the fabrick by this needful preparation. We have, in a former chapter, delivered the system and theory of drains, and we are here to proceed to the reducing that, as the other articles to practice.

There must be a passage for water, or it will lodge, and the house will be damp and uncomfortable; this passage must be free and unobstructed, or it will remedy the evil but partially, or only for a time: and as foulness of various kinds will make its way with all water, and this will naturally, though by slow degrees, in time fill up those drains intended to carry it off, this choaking and filling of them up, must be guarded ag and in their very first construction.

Every bricklayer can make a drain that shall receive the water for the time, but it is the architect alone who can form and construct it in such manner that it shall perform its office continually, like the vessels in the human fabrick, through which the fluids circulate freely, from our birth to our death, without disorder, interruption, or obstruction.

We see the vast preparation there is made for this service in the regular building of cities; and the same, in a proper degree, must be used for every private house, great or little, or the same inconveniencies will follow.

The most conspicuous buildings, or the most shewy parts of them, do not obtain the architect most praise; *Tarquin* has been as highly applauded for constructing the great common sewer at *Rome*, as those who erected the most pompous edifices. The writers of that time speak with wonder of its bigness, and it is true that its capaciousness rendered it worthy to be a model for all succeeding time. They have recorded that it would receive loaded carriages, and *Palladio*, who measured a part of it near the *Senatorian* bridge, the part now called *Santa Maria*, found it sixteen foot in diameter in the clear. As this was proportioned to the buildings it was to drain, so must every conveyance of like kind; and this may stand as an everlasting rule, that the safe side to err upon is the allowing it too large. A little expence in this work is very ill saved, for there is nothing more troublesome than what is done to this part of the work afterwards.

A private house, as well as a large pile of building, must have its principal drain for receiving from all the rest, and this, as it is the most essential article, is to be the

architect's first care. To understand what is needful to be done for conveyance, Chap. 2. let him first observe what are the several sources of the wet, and proportion the capacities to the quantities, that upon ordinary, and extraordinary occasions, may fall into them.

C H A P. II.

Of the construction of pipes and small drains, for the conveyance of rain water.

THE roof of a house is a space of so much extent that it receives a great deal of rain water, and for this, conveyances are first to be contrived: they must not be proportioned to the common fall of rain, for then every violent shower will throw more on the roof than they are able to receive; and, in consequence, they will run over: this will be a great disgrace to the architect, as well as a great inconvenience to the family.

As he is to make the conveyances for this larger than might be supposed needful by those who computed only for the common chance, so he must construct the larger and more considerable drains into which this and other abundant water is to be received, much larger than may be needful for common occasions; for accidental redundancies will happen, and he who knows what they may be, will provide and guard against them.

The water which falls upon the roof of a house must not be permitted to lodge in any part, for the inconveniences of this are plain. Where it can lie, it will soon overflow the lead which is laid to receive it, and when it has only the tiling to keep it in, that will not perform the office long, but the water will loosen the joints, rot the cement, and make its way to the timbers, which will soon be destroyed by it.

To prevent this, which is the first source of water to be carried off, the several parts of the roof must be made so slanting to one or more places, that the water which falls, in whatsoever quarter, may readily and freely run to one of them.

In all these places to which the wet will be carried, there are to be put pipes for receiving it; these must be of a due diameter, that the most violent shower may not over charge their capacity.

This is the first provision for the wet; these pipes convey the whole quantity from the top to the bottom, and it is there to be received into proper channels.

For this purpose, small drains are to be made, beginning at the nose of each pipe, and these are to be carried to the larger. These channels are to be the second conveyance of the water, the pipes being the first. They are to be proportioned to the quantity they are likely to receive on the most extraordinary occasions, and the safe way is to make them something too large for that.

Under

Book III. Under the name of a third conveyance is to be understood the drain, or drains, (for, according to the extent and plan of the edifice, one or more may be requisite for this purpose) which are to receive the water from these several small channels.

In all this, the builder is to observe an encreasing proportion; and having calculated the diameter of his pipes for the greatest fall of rain on the roof, he is, from that diameter of the pipes, to regulate all the rest; only observing that all is to proceed in a greatly encreasing proportion.

As each first channel, or small drain, is to receive the water of one pipe only, it is to be calculated in an encreasing proportion to its diameter; and, in the same manner, this larger drain, or third conveyance, is to be calculated from the several diameters of those drains from the pipes which come into it; and this also in a considerably encreasing proportion.

Let not the architect be startled at the size he will find necessary on this principle; for he may be sure geometry and arithmetick are sciences that will never deceive him. Measures and figures are capable of computation to a mathematical truth, and he is therefore never to deviate from them in his plan.

In this, as in the preceeding articles, we shall caution him that to exceed the proportioned dimension is much better than to fall short of it. The erring on this side can only be attended with a small encrease of the charge, whereas any mistake in the other oversets the whole design. It is in vain he has calculated his first and second conveyances according to truth, if he make the third too small: it will answer no purpose that the pipes and the first channels are well adapted to the service, and proportioned to one another, if these larger drains be too small. Any obstruction there will have the same effect as if it happened in the others, and they will be liable to burst and run over as much as if the fault were there.

Of SESSPOOLS, their use, proper places, and dimensions.

WHEN the proportion of the pipes and drains are settled so that they shall be able to convey off all that falls from the upper part of the house, the next consideration regards their being put into a condition to continue in a capacity of performing their office freely.

To this purpose care must be taken that they do not choak up. The architect has made his first calculation justly, when he has so contrived the pipes that they will take all the water of the roof, so proportioned the first drains that they will give a free passage to this water, and the second so that they will receive and discharge it again: but if he were to stop here his calculation would serve to but little purpose.

The measure of the several drains has been proportioned to the quantity they were to pass, and if they always retained their first capacity, they would at all times be ready to serve this purpose: but we are to consider that it is not clear water that runs into them; a great deal of soil is washed in with it, and though this runs freely down the pipe, mixed with and suspended in the water, it will separate from it, and settle to the bottom in the secondary channels.

One parcel of settlement will gather upon another, and, by degrees, the channels will fill more and more up; as they fill up their capacity becomes less, and consequently, though they might have been made in an over proportion of size at first, they will thus become too small, and the pipes will choak as much as if the conveyances from them had been originally too small, from an error in the construction.

This would be the case if the several drains were built up and finished according to the calculation, without any farther precaution: we represent it to the young builder in its proper colours, that he may see the necessity of providing in time against it.

This provision is to be made by means of certain cavities, disposed in proper places, for the reception of this sediment from the water; these cavities, or holes, are called *sesspools*, and they are to be contrived and disposed with the same care and caution that is used in making the drains themselves.

The direction to be given the builder with respect to these sesspools, is, that they be of a due bigness, and disposed at proper distances; and lastly, that they be so contrived that they may be cleaned at times without difficulty, for otherwise they would fill up, though ever so large, and then the evil would be continued to the drains; they would fill up next, and all would take the same ill turn as if the drains had originally been made too small.

Book III.

It is a good rule to make a fesspool near the opening of every pipe; this is taking caution in the first instance, for it is preventing a great deal of the grossest and worst of the foulness from coming into the channels or drains at all.

This fesspool at the mouth or opening of the pipe must be made very deep and large, and this for a plain reason; the water comes with such a violence down the pipe, that if the fesspool here were shallow or small, it would all rise over its edges together, and the water would run as thick into the channel as if there were none; but if there be a sufficiently large and deep hole made there, the water will deposit its worst and thickest part in it: for, as this will keep full of water, let that which comes down the pipe rush in with ever so much violence, its motion will be check'd a little there, and the gross matter will subside; this it is always ready to do when the hurry of that motion does not prevent.

The first fesspools being thus made, one under the nose of each pipe, others are to be dug at proper distances, and in a particular manner, where there are angles in the course of the drain, for in all these places, the strait current of the water being stop'd, there is a tendency to the settling of the other matter.

These must be, like the first, large and deep, the bigger in moderation the better; they can be of no service if too small: the bigger they are the fitter they are for the intended service, and the seldomer they require cleaning.

The place of the several fesspools being fixed, they are to be so covered that there will be no difficulty, confusion, or inconvenience in opening them; they must be cleaned from time to time, and as to the quantity they may hold before they need it, this is one good rule, that the soil in them should never rise within a foot of the floor of the drain; for if it come so near the level, any violent motion of the water will disturb and raise the mud, and it will be carry'd into the channel or drain, and settle there. This is setting aside the very use for which the fesspools were made.

C H A P. IV.

Of the ways of discharging the water according to the situation of the house.

WE have contrived for the carrying the water from the roof, receiving it from the pipes, and collecting it from the several channels cut for that purpose: We have stopped, as the builder who reduces our rules to practice must, to provide for the reception of such foulness, as, if suffered to continue its course with the water, would interrupt its course, and pervert the intent of all that had been doing; and having taken care to prevent that inconvenience, we are to pursue the course of our collected water.

We have conveyed it now from all parts of the house, however large or extensive, into one common drain, and we are to consider what is to be done with it. It is not to lodge there, but to be conveyed thence in the most free manner, and this is to be done different ways, according to the condition of the place where the house is built.

The drains are to be continued from the several cesspools, and they are to open either into some general conveyance, whence it may be carried quite off, or into large receptacles into which it may be all received.

The first of these is commonly to be practised in *London*, and is a great convenience; but, as there is not this opportunity in other places, the other method must generally be employed in the country.

In the constructing of great cities, as soon as the course of the street is settled, a large drain, or common sewer, is carried all along it, at such a depth as to receive the wet from the lowest part of all the houses with a sufficient descent; and this is the convenience there is in general in the streets of *London*. Therefore when a house is intended there, the method, in this part of the construction, is to carry on the large drain, with several cesspools, at proper distances, till it opens into the common sewer as already described, as built for the general service.

This carries all wet, of whatsoever kind, or from whatsoever source, perfectly and cleanly off: drains are to be laid for the receiving the accidental wet from the various family occasions, which, like those from the pipes that receive the water from the roof, are to be all continued, with cesspools at proper distances, to this main drain; and this, receiving all the wet from the different sources, and discharging it into the common sewer, it is carried off altogether.

In the country this great convenience of a common sewer is wanting, and in some of those spots where town houses are built, there is the same disadvantage. Here the architect is to fall upon another method, which, being properly observed, will have all the same advantages.

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For this purpose, where there is no method of discharging the water, he is to prepare a place for its reception; this must be no other than a cesspool of proper size, or, if the reader chuse to call it so, a well.

The place for this great cesspool must be the lowest spot of all the ground, that a natural current may lie to it from every part; and it must be there dug of a proper size and depth according to the occasion.

If this well be properly dug it will answer all the purposes of the common sewer; the earth is of a loose and open structure, and water, let into a hollow made for that purpose, will naturally make its way through the crevices.

We see that in moist ground, in order to make a cavity hold water any thing near the surface, there is to be a great deal of expence and trouble in claying and ramming the sides; in this present case, the design is that it should not hold water, but let it pass, and therefore, when none of these cautions are used, the wet will make its own way, and be lost as was intended.

The bigness of this must be proportioned to the occasion; and, as it is better to err on the side of making it too large than too small, reason will dictate that it should be very considerable: while it is such as will receive all that is offered to it without being full, all is safe; for the water that does not run over will find its way off; but if it be liable to be over filled, there will be all the inconveniencies that would have attended the choaking of the other works. The wet will naturally keep at a certain height in this, according to the level of the water, and the rest which is brought in at any time will go off soon: one of these wells, or great cesspools, properly constructed and disposed, is generally enough for the largest edifice; but it may happen from the disposition of the ground, and extent of the place, more may be convenient: let not the builder misunderstand this, more than one general cesspool can never be necessary, because if that be made in the lowest spot of the ground, every part may be drained to it; and if be dug of a due bigness it will hold every thing that comes, therefore there can be no absolute necessity for making more; but it may often be more convenient and less expensive to make two or three in different places, each of which shall receive the draining of some one quarter of the ground. A greater number of small drains may, in many cases, be made, at a smaller expence, to two or three different cesspools, than a few longer and larger, that must go through a great extent of ground to one. This is the occasion of multiplying the large cesspools, and a good architect is frequently justified by reason, in doing it from these considerations.

Of the disposition of DRAINS, CHANNELS, and SESSPOOLS, through the whole ground plan.

IN large houses we are not to consider the extent of ground the foundation covers as all that is to be the subject of draining; there will be perhaps an area before, and a garden behind, and the architect is to take all these into his regard on this occasion. He is to look upon the boundary wall as the circuit of the ground he is to drain, and proportion the work to the whole; not that the drains and sesspools will need to be multiplied and enlarged in proportion to the space, as if all covered with building; but still they are to be considered. Water will lodge wherever there is a descent, and it will be easily carried off wherever there is a channel cut below: therefore he may be sure a great deal would naturally lodge in different parts of the area and garden, but he will understand at the same time, that, having made the needful preparation of drains and sesspools for carrying off the wet of the house, it will be easy for him to contrive to discharge all that would settle here the same way.

The best construction of the several drains is this: let the principal drain be cut through the middle of the plan of the house; and let this be, as we have said on every occasion before, something larger than to answer the most sudden fall of water: for the draining the natural wet of the house, a channel may be carried into this main drain, which goes through the centre from every room of the lower story.

This being done, the area will next come into consideration; and this is to be drain'd by channels, or smaller cuts. In general, a couple of these will be sufficient, or, if not, more than a third is very rarely required; these are to be cut through the extent of that piece of ground, and to open by wide mouths into the middle or great drain already mentioned.

When this is done, the places of the sesspools are to be considered; and first a main one is to be sunk.

To this another large drain is to run, upon the principles already laid down for the draining the roof. We have shewn how the pipes are to discharge themselves, each into its proper small channel, or drain, and those are to open into this main drain, which is to run, like the first, into the common sesspool.

The pipes are to be placed at the angles of the building, and these channels conveying the water from them to the drain that opens into the sesspool, it is thence to be discharged by another large drain into the common sewer, if the house be in town, where there is that convenience; if not, this sesspool must be made the larger, and its situation must be the more considered.

Book III. In those places where there is not the great convenience of a sewer in towns, or of running water to carry off all clear in the country, there must be a great deal of regard paid to the construction and situation of the great cesspool.

This is to receive not only all the waste water, but in a manner, all the filth of the house; and it is to remain and stagnate there. Ill smells, and even unwholesome vapours, will doubtless rise from this, and it may be not only disagreeable but mischievous: in this respect we should adopt the *Italian* practice, which is founded in the greatest reason; they never content themselves with shutting up such a place as this, so as to confine the bad air, but always give it vent in a proper manner.

We have many instances of the air being so poisonous in these covered wells, that when labourers go down into them, after they have been long shut up, they are killed by the vapour.

Would not any reasonable person be very averse to having a vapour confined under or about his house, which is of a poisonous quality? The method of preventing it is by giving these great cesspools a communication with the open air; this will answer the purpose without the help of ventilators, and this the *Italian* architects, who are worthy to be our models in other respects as well as the present, always contrive. They place the great cesspool near the out wall in some remote part of the ground, and they carry up two or three brick funnels from it into the open air, on the other side of the wall.

The principal conveyances being now made, regard must be had to all the offices, for wet and filth will be produced in all of them; drains of the smaller kind, such as receive the water from the pipes, must be carried from every one of these, and open into the main drain next to them, and there discharge their water.

After this, the plans of the bog-houses are to be settled, and of all other needful conveniences of that kind, and for each of these is to be dug a well; from every well there is, in the same manner, to be carried a channel into the next main drain, to discharge their abundant water; these, and other that receive the waste waters from wells sunk for the service of the family, are all to open, each by its proper mouth, into one of the large drains, and the whole is thence to be discharged as we have shewn.

We have spoken already of the placing cesspools at proper distances, and this caution must always be kept in mind, and executed wherever there are drains; for there will be little use in constructing them ever so well, if they be continually liable to fill up.

We have described the two or three main channels made for draining the area, or fore court, and the same are to be made, in the same manner, in the garden, continuing them with a gentle descent to the next large drain; to the great sewer, or to the great cesspool, as their situation renders most convenient.

With respect to the area, or fore court, there will frequently be required small channels to the two or three larger; and, where needful, they must never be spared: there must be also small drains carried from all the lodges into these larger drains, in the same manner as we have directed them to be carried from every room in the lower story to the main drain, passing under the centre of the house. Thus one part of the work will be the rule of another; and when it is once begun with a due sense of the theory, the practice through the whole will be very easy.

C H A P. VI.

Of the construction of DRY DRAINS, and the general discharge of water.

THE necessary precautions are now taken for conveying off the water that is brought by rains upon the roof, or thrown off by the various occasions of the family, but the architect is not to stop here; if he should, after all his care, his whole work might perhaps be useless, and himself censured after all his contrivance.

Beside these waters which the business of the family discharges, and which fall from the clouds, there may rise other water from the ground, and that, in many places, in very large quantity. Conveyances must be made for this, or the care taken on the other hand will be ineffectual.

This must be provided for by what are called *dry drains*. These are to be small, and, according to their name, laid dry: their use, we have observed, is to carry off the water that may arise from land springs, or drainings from higher ground; and, as the nature of their service is this, they must be adapted in number to the occasions.

It is a very ill choice in any one who can avoid it, to build on swampy ground; but when this is the case a great number of these drains are needful.

These dry drains being laid, and the others disposed according to the directions we have here laid down, the house will be always dry and sweet; these are two very great considerations, for wherever water can lodge, there will be damp vapours and ill smells.

To explain all that is here laid down, by example, and present it to the eye, as well as to the imagination of the builder, we have given, in the annexed double plate, the plan of a house of considerable extent in town, where there is the advantage of a common sewer, for the reception of the water from the several drains. This we have thought the more immediately useful to the town builder, because there is every where this convenience for him; and, as to the country, we have directed

Book III. directed what is to be done there. If there be a running water near, that will serve perfectly as well as a sewer, and receive all and carry it off; if not, the large cesspools we have described are to do the business, and we extremely recommend it to the architect to give them openings to the air in the *Italian* manner.

When the discharge is made into a running water in the country, the owner need not fear any inconveniences that will arise from it, for all filth is presently carried off this way, and the only consequence will be, that there will be more and better fish of many kinds there than elsewhere; the various things discharged from the house inviting and feeding them. *Palladio*, who mentions the great sewer in *Rome*, observes that the finest and largest fish were caught thereabout.

This may be sufficient to recommend to the country architect the method of discharging the waste into a running water, where it can be done, and the constructing his great cesspool properly, where no better convenience can be had.

With respect to an edifice in town, the example we have given in plate XXX. is of a very large and elegant one, and consequently it will answer every purpose to the *London* builder; for where the extent of ground and variety of offices is less, it is only reducing the number and extent of the drains accordingly.

In our plan, there is the whole construction for draining a house, its offices, its area, or court, and its garden; nothing more can therefore be required on this head than the referring the design to the account we have given of its several parts, which will be easy to the young student from the annexed explanation.

C H A P. VII.

Of the construction of the several kinds of SEWERS and DRAINS.

WE have shewn the young builder in what manner he is to design and dispose his several drains throughout the whole plan of his fabrick, and having thus far proceeded in his undertaking, the next thing is to explain to him their proper construction; it will be in vain that he have disposed and contrived them ever so well, if there be errors in their structure.

We have already explained to him in what manner he is to proportion the capacity and extent of his drains to the uses which they are to serve, and the quantities of water that may fall on them; it remains here, that we shew how such as are of certain given size may be best constructed. It is impossible, by any rule, to say of what particular dimensions all the drains of any house shall be; but we shall here take as instances, some drains of the most usual size, and such as may suit such a plan as we have just given; and these we shall explain here both by words and figures.

In the first place we will suppose the architect finds it proper to make a drain of a foot and half wide, this he may construct in the following manner.

Let the sides be nine inches thick; let them rise a foot high; let the arch be turned four inches; and let the bottom be paved with brick laid flatwise.

Here is, in a few plain words, the method of fabricating an eighteen inch drain, which will be strong, durable, and able to support itself; and all with the smallest expence the nature of the work allows.

If he find it convenient to make a drain of one foot ten inches wide, the side walls are then to be one foot three in height, and the rest to be constructed as before.

In the same manner, for a drain of one foot two inches wide, the height of the side walls is to be nine inches, and the sweep of the arch four.

All these are to be paved in the same manner, with bricks laid flat.

Other small drains are to be constructed upon the same principle and proportions; as to the main drain, that should be a yard broad, and of the same height in the walls; and the arch over it to be turned nine inches thicker: the bottom of this need be paved no otherwise than as the smaller ones, for there is no stress there.

This is the usual way of constructing sewers and drains, and we have accordingly expressed it to the reader's eye in the plate annex; but as we hope he will be always ready

Book III. dy to depart from the common tract when there is reason for it, we shall here subjoin
 an improvement upon that method, first telling him the occasion.

In all the drains we have hitherto named, the floor; or bottom, is flat; and the two walls rising at right angles upon it, there are two narrow niches, or corners, all along the drain, one on each side. Now both the flatness of the bottom, and the straitness of these angles, are very exceptionable.

The use of a drain being to carry off water freely, the great danger is of its lodging some part of the settlement.

We have contrived for the settling of the grosser part of the water, by the numerous cesspools we have directed to be dug at proper places; but still, though the coarsest part is left behind in these holes, the water is not delivered clear into the drains: there still is a great deal of foul matter among it, and this is always disposed to settle from it.

A flat bottom favours this settlement of the mud, and the narrow angles on each side always detain it. This we see in every place; where such corners always presently fill up.

Wherever there is a lodgment of the foul matter from the water begun, it soon encreases, and the more the drain or sewer is choaked up, the less it is capable of answering its purposes.

This is the inconvenience to which all drains of the common construction are exposed, and having proposed it to the student, we shall lay before him the proposed remedy.

Instead of making the bottom of the sewer a flat floor, let it be in form of an inverted arch, answering in part to the sweep of the arch above. Every one knows that the freest passage that can be, is through circular channels, and these would sufficiently wear that form; they would in a manner resemble so many vast water-pipes of a circular bore, and there would be no danger of their filling up. The perpendicular walls would detain nothing, because there are no angles in their joining, and the bottom being round and free, all would run off easily and as it should. The thickest water would pass such a drain, if it moved tolerably quick, without depositing any settlement; and if, from a very slow motion, some small matter should lie at one time, it would be carried off by the next quantity that made its way through the drain.

This method of constructing sewers is used very successfully under the new building of the horse guards; and we have added in this plate a correct drawing of them, and of the great sewer into which they are received.

Explanation of Plate XXX.

A plan of a town house and offices, with garden and court, where drains and their uses are particularly described. That part of the plan shaded with a faint tint is the house and offices, and boundary wall; the other lines denote the drains and fesspools.

- A. Is the main drain through the middle of the house, to which small ones may be convey'd from every room in the lower story, if required; and this has two branches into it, letters B. B. to drain the fore area.
- C. Is a fesspool.
- D. A larger drain from the said fesspool, which receives several other small ones, that bring the water from off the house and offices, coming from the several angles of the building marked E. where the lead pipes are fixed that bring the rain water from the roof, and convey it into the great sewer F. in the street.
- G. Are other drains that bring the water from other offices, and also receive the soil from the bog-houses, where wells are sunk; these also take the waste water from the well H. and empty themselves in the great sewer F.
- I. I. Are fesspools in the fore court.
- K. Are the drains to take off the water from the said court, and from the lodges, they discharge themselves into the great sewer F.
- L. Are small drains laid dry, and are called dry drains, as their use is to receive and carry off the waters that arise by land or other springs: they are made use of for draining of swampy lands.
- M. Is the elevation of a drain one foot six inches wide, whose sides are nine inches thick, twelve inches high; arch four inches, and the bottom paved with brick laid flatways.
- N. Is a drain of the same kind, differing only as to its size; being one foot ten inches wide, and one foot three high the side walls.
- O. Is a drain one foot two inches wide, nine inches high the side walls, turned with a four inch arch, and paved with flat brick.

Book III. P. *A nine inch drain and paved bottom.*

Q. *Is the main sewer, whereto all the aforefaid drains lead; it is three foot wide, three foot high to the springing of the arch, which arch is turned nine inches thick, and the bottom paved.*

R. *Is the manner of making dry drains, and which are commonly called weeping drains, and are only four inches wide.*

These are the kind of drains which are ordinarily made use of; and being made flat at the bottom, they are very liable to be stopped up from the lodgment of the soil that comes into them.

The most useful sewers and drains are those that are made as described at letter S. and T. their bottoms, being circular, are not so liable to stoppages.

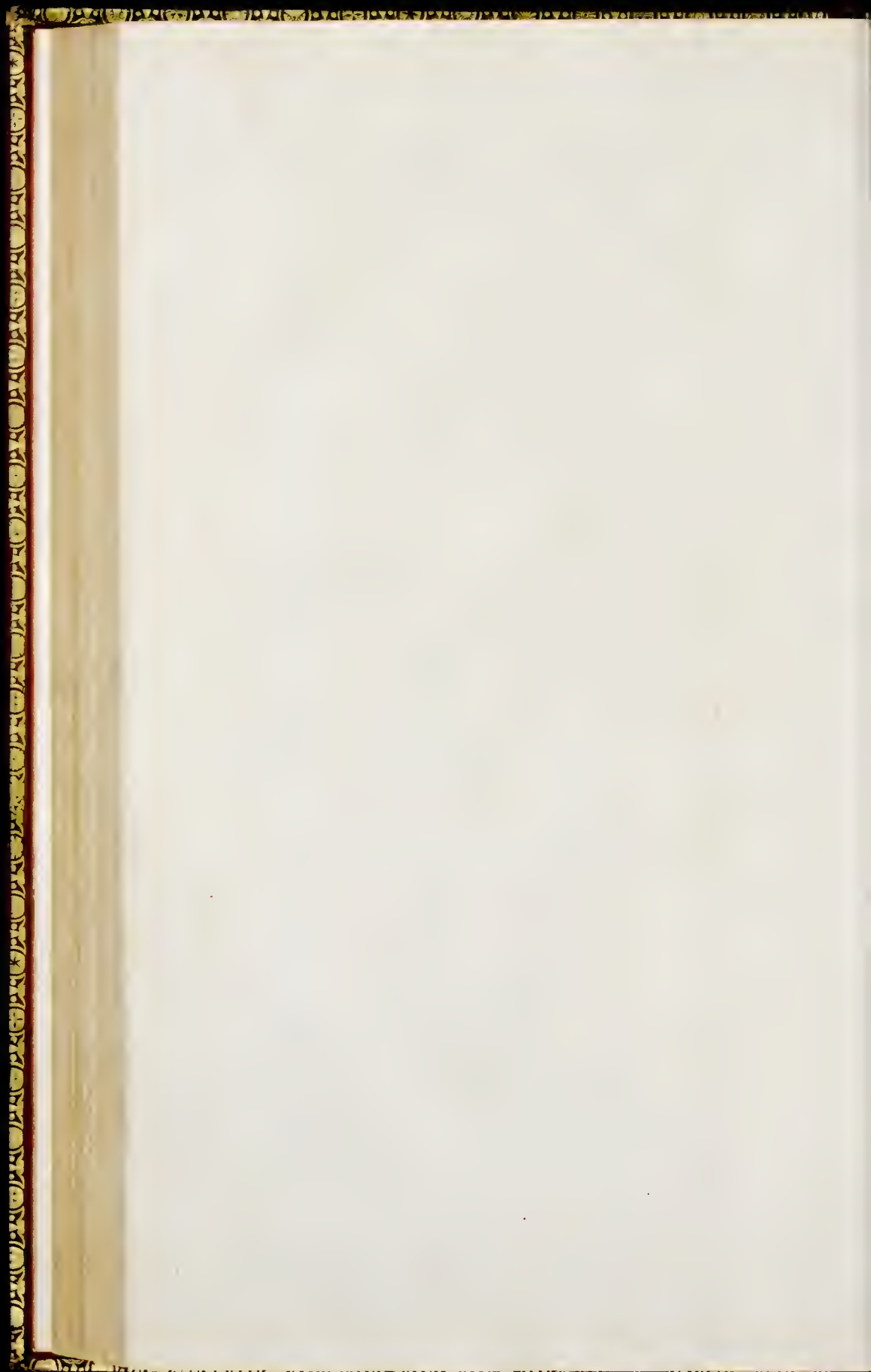
This kind of drains are made under the new building of the Horse Guards, and lead to the great sewer that comes under the middle gate way, of which letter S is a correct drawing; it is worked with the soundest stock brick, and in the inside four inch thick; the bricks are laid in terras.

Plan of Sewers and Drains.

Pl. 29-30



0 10 20 30 40 50 Feet.



C H A P. VIII.

Of the construction of houses.

WE have seen ingenious authors of all nations following one another's steps in the history of building, and tracing the edifices of more civilized time from the rustick cabin, or the cavern hollowed out into the mountain's brow; and we read the dreams of *Pliny* with more candour than they deserve, when he tells us who first built better houses. We are not about to retail the patched productions of the one, or amuse the reader with the idle fancies of the other.

Doubtless houses were built long before histories were written; and it is easy to conceive, though impossible to know with certainty, how they arrived by degrees at their improvement.

Caverns and arbours were undoubtedly the first habitations, for nature's own hand constructed these; and men, destitute of better security, would take to them and finish them: but these, though the first houses, could not be long their only habitations.

The mud wall tenement naturally rose first; for we may very well believe that early cabins were built with clay, though we neglect the name of *Doxius*, the son of *Gellius*, who, we are told, first built them, and smile at the story of his taking a swallow's nest for his model*.

The sun would harden these rude walls by its heat, and thence the mind of man would soon conceive the method of cutting out the wet clay into shapes, and drying it before using in his house. Thus bricks must have been an early invention; and they would doubtless have been in universal use, had not nature disclosed to those who dug for this poor material, her mines and stores of stone and marble.

These offered a more immediate service, and promised a longer duration; they naturally fell into large pieces in the quarry, and art would soon find the way to break them into smaller: and naturally, from the sight of these greater and nobler materials, men conceived the ideas of greater buildings, palaces, and temples.

The quarry supplying stone, clay beat up with sand, or found in the natural condition of loam, ready mixed for the purpose, supplied the place of mortar; and the tools employed to fashion the masses of stone, soon were used to carve and decorate their surfaces.

* *Pliny* l. vii.

Book III. This is the plain and natural course of things, and this probably was the origin of architecture: but when it happened, or in what quarter of the world, are points that dreaming monks might better study than people who enjoy the present advantages of science. It is enough for us to acknowledge the defect of information; and, while we trace the progress of the art thus from reason, to say it is too old for history.

If the *Troglodytæ* lived in caverns in the time of *Strabo* *, they could not want the power of building houses; nor are we to imagine that, because *Eurialus* and *Hiperbius* built the first brick houses at *Athens*, there were not pyramids, before their time, of the same materials.

Diodorus Siculus may give the origin of walls to *Vesta* †, and the grave *Theophrastus* ‡ attribute the first digging of stone to *Cadmus*, but we should look on this as wretched trifling. The *Greeks* traced things as far as they could, and where their information stopped they supposed they had begun. The fly, in the fable, who thought the sun created when it rose upon his first morning of life, judged just as wisely.

Man's sense of feeling would immediately tell him that he wanted a house for shelter and defence; and his reason, given him by the Creator for that purpose, would teach him how to set about it.

The first edifices would be rude and unartfully constructed, but there would be soon improvements. Thus let the student in architecture consider it; let him consult reason first, and call in upon that first thought the assistance of art, which has now established the whole practice upon certain rules, and reduced the flights of wild and ignorant fancy to a regular and noble science, worthy the attention of the greatest genius.

* *Strab. Geog.* l. xvii. † *Diodor. Sic.* l. vi. ‡ Quoted by *Pliny* and *Solinus*.

C H A P. IX.

Of the giving an edifice a proper strength.

THE house is to be suited either to the condition of the person who is to inhabit it, or to the place where it stands; the first is the point in building by commission for a family; the other in building for the chance of letting. The latter is the common practice in great towns; but, even in that, there is something to be considered with respect to suiting it to the inhabitant.

Though the architect, in this case, will not know who is to live in his edifice, yet he can very well guess of what rank he will be, and this according to the place where it stands: thus much is to be considered in building in this general and random way; the street, or square, the neighbourhood, the conveniences, and the other concurrent circumstances, will instruct the builder; for he would be mad who should build a shed in *Grosvenor Square*, or a palace in *Hedge Lane*; and thus far he will be able to proportion the building to the tenant, or purchaser, though unknown.

After this first consideration of the general condition and extent of the building, comes the article of strength. Whatever be the size, the solidity must be proportioned; for when the house is not able to support itself, all other care is lost upon it.

We see a strange difference between the buildings of earlier ages, and those of the present time, in respect of this article of strength; but the reason is plain: the nature of the tenures in *London* has introduced the art of building slightly. The ground landlord is to come into possession at the end of a short term, and the builder, unless his Grace ties him down to articles, does not chuse to employ his money to his advantage.

It is for this reason we see houses built for sixty, seventy, or the stoutest of this kind for ninety-nine years. The care they shall not stand longer than their time occasions many to fall before it is expired; nay some have carried the art of slight building so far, that their houses have fallen in before they were tenanted.

From this general practice in the common way of working, has been introduced the same conduct in better buildings; and it is but once in an age we see a structure, like the new *Horse Guards*, built for posterity.

Perhaps the modesty of our generality of architects contributes to this practice. The *Greeks* and *Romans* built for succeeding ages, because conscious their works would be the admiration of all time; our people are not so sanguine in their hopes, and therefore not so solid in their structures.

*

But

Book III. But whatever be the occasion, there is nothing that more deserves or demands the interposition of the legislative power; the safety of the subject is the concern of every wise government, and it is certain the present method of running up houses in *London*, not only disgraces us in the eye of strangers, but threatens continual disasters. Till such a controul shall be laid upon bad builders by publick authority, those who have more skill and more integrity should distinguish themselves from them by their work.

Two things give strength to a building, the choice of good materials, and the putting them well together: as to the first, we have, in the preceding part of this work, given all the rules for judging of them, and he who has his eyes, and will observe the characters of them, cannot be deceived; for the other, it is what we are here to inculcate.

The first care, in the regard of strength, is that the supports be equal to the weight they carry; these supports are, in common building, plain walls; and these we have treated of already, under the heads of essential parts, and therefore need not repeat that doctrine here.

When walls are not able to support the incumbent force, recourse is had to spars and buttresses; but these are an unseemly and very disagreeable sight. To avoid this, the architect should consider in time what the force, or pressure, will be; and proportion the solidity accordingly: great arches are the most subject to impair the strength of walls in this manner, but they should be lightened, and the wall strengthened in the original structure of the building.

The occasion on which buttresses admit of most excuse, is on the outside of the walls of *Gothic* churches; though in these a good architect could have contrived to avoid the need of them, by lightening the arch, and strengthening the wall in its plain, perpendicular form. When we see this sort of support on any other occasion, it is a great disgrace to the architect. Let the young student consider this in time. We have shewn that, in the instances where it admits of most excuse, it might have been avoided; and this may inform him that he is left without apology, when he brings himself under a necessity of using it elsewhere.

The architect having thus, by an honest choice of materials, and a judicious manner of proportioning the superstructure to the supports, taken care of the main consideration of strength, the next regard is to be shewn to proportion and regularity, in the distribution of the several parts.

C H A P. X.

Of proportioning the several parts of a house with judgment.

THE extent of ground being determined, the materials chosen, and the weight of the roof, and thickness of the walls, settled in the builder's mind, he is next to consider the article of proportion.

Here is a space to be covered with building: and the great consideration is its division into parts, for different uses; and their distribution. In this regard is to be had to two things, the convenience of the inhabitant, and the beauty and proportion of the fabrick. Neither of these should be considered independently of the other, because if it be, the other will not fail to be sacrificed to it; and this, which would be very disagreeable, is never absolutely necessary.

If the house be for a person in trade, the first and principal attention must be shewn to the article of convenience; but with this the builder should always carry in his mind the idea of beauty, proportion, and a regular distribution of the parts; that, wherever it can be done, he may favour the one, while he is absolutely consulting the service of the other: in the same manner, when the house is for a person of fashion, the beauty and proportional disposition of parts is to be principally considered; yet the great and needful article of convenience must not be disregarded.

In the building where there is to be a shop, it would be absurd to thrust the parlour into the middle of it, in order to give that room an exact proportion; but, on the other hand, a little may be retrenched from some less conspicuous parts of the shop, to enlarge that necessary apartment behind it.

The merchant's house must have warehouse-room, but that need not break in upon every apartment, because there is no necessity for any exact inch of ground in a particular spot for this use; though there must be a certain quantity upon the whole.

The parlour, in a small private house, is a very convenient room; but, as it is not the apartment of most shew, there is no necessity it should reduce the passage to an alley; and in larger houses, inhabited by persons of distinction, there must be anti-chambers, and rooms where people of business may attend the owner's leisure. These must not be ill constructed, because those of some rank may often wait in them; and beside, every thing in a great house should have an air of grandeur: but, on the other hand, the care of rendering these convenient and proper for their use, is not to extend so far as to trench upon the rooms of state and elegance.

When convenience has been thus far considered in the plan, the next regard is to be shewn to proportion.

Book III.

This is a thing of more strict concern than the other, and must be managed with the greatest accuracy. The matter of convenience falls under the direction of fancy, but proportion is established upon rule; there is no apology for an unneedful violation of the truth of the science in this article.

The proportion of the several parts of an edifice is of two kinds; for they are to be adapted, in this respect, first to the whole building, and afterwards to one another.

It is strange to see that many of our architects, who have been able to plan out a whole of a good building, have miscarried miserably in the proportion of its parts. It is in this the antient architects are found, by all that remains of them, to have been most particularly excellent: they formed at once an idea of the whole structure they designed, and of all its apartments, and it is evident they throughout kept that general idea always in remembrance. It is hence we see such a perfect harmony in all their works, and from this, as we have shewn in its place, arose those several variations in their larger parts: these, and the least, in all their works, are perfectly suited to one another. It is in this the student who would distinguish himself in architecture should principally follow them in the disposition of a house; we err greatly, and he will scarce set any modern model before himself that is not defective; whereas when he turns his eyes up to the antient, there is not any one in which he will not find perfect truth.

The first kind of proportion is that of the several parts to the whole, and in this reason is a very plain and general guide. We may divide houses under three heads, the large, the middling, and the small; and in each of these classes plain sense will dictate, that the several apartments should be of the same character with the whole; that the rooms in the large house should be large, in the middling they should be middling, and in the small they should also be small.

This is proportioning the parts of a building to the whole; and this rule, which is directed by common reason, is confirmed by all the writers on architecture: for sciences are built upon reason, and experience which supports her determinations.

The dimensions not only of every room, but of every part of a house whatsoever, should be thus laid out in a just proportion to the extent of the ground plan; for it would be absurd to see a great house divided into a multitude of closets, or a little house consisting only of a hall and dining room.

Here proportion falls in with the rule of convenience; for such a house would not be more absurd than inconvenient.

The apartments being thus suited to the house in general, are next to be proportioned to one another: this, one would think, were as rational and plain a precept as the other, yet we see it continually violated. Nothing is so common as to see a house built for the sake of one room; and in that case the rest not being proportioned to that room, it seems not to belong to the house, and there wants that symmetry which is the great beauty in building.

In houses which have been some time built, and which have not an out of propor- Chap. 10.
tion room, the common practice is to build one to them: this always hangs from one
end, or sticks to one side, of the house, and shews to the most careless eye, that,
though fastened to the walls, it does not belong to the building.

The custom of routs has introduced this absurd practice. Our forefathers were
pleased with seeing their friends as they chanced to come, and with entertaining them
when they were there. The present custom is to see them all at once, and entertain
none of them; this brings in the necessity of a *great room*, which is opened only on
such occasions, and which loads and generally discredits the rest of the edifice.

This is the reigning taste of the present time in *London*, a taste which tends to the
discouragement of all good and regular architecture, but which the builder will be of-
ten under a necessity to comply with, for he must follow the fancy of the proprietor,
not his own judgment.

This taste for a great room is not confined to *London*; I remember to have seen in
Leicestershire a house, the proprietor of which was so fond of a large hall, that it was
only surrounded with a number of deep flat closets, and shallow galleries. This was
the structure of the fabrick both above stairs and below; but in this the architect stood
excused, for it was too much for any one to have been guilty of but its owner. In the
same manner we see, where an ignorant fancy will not be controuled by the judg-
ment of the architect, many a large edifice spoiled at a great expence, and rendered
at once ridiculous and inconvenient.

Whatever the false taste of any particular time may adopt, the builder, though he
complies with it from the orders he receives, yet he must never suppose that the caprice,
or fashion, can change the nature of right and wrong. He must remember that there
is such a thing as truth, though the present mode will not follow its steps; and esta-
blish it as a maxim in his own mind, that proportion and regularity are real sources
of beauty, and always of convenience.

Of the disposition of parts in an edifice.

THOUGH it be incumbent upon the architect to give a proportion and harmony to the whole building, and to make every part of it as suitable to that whole as its nature will admit, yet he must not endeavour to make all equally elegant. This has been the false taste of some, who have thence been profuse of ornament, and yet have not been able to give any real beauty. They have wondered at the effect, but this is the reason: various parts of a house are suited to various services and purposes, and they are not all to be contrived for shew. The plainness of some will set off, and shew to advantage the beauty of others; and, on the other hand, the eye that is fatigued with seeing an attempt to finery every where, is satisfied with nothing.

To avoid this error, when the architect has laid down in his plan the dimensions of the several parts of the edifice, let him consider which of these are calculated for greater and which for lesser services, and accordingly distribute among them all that gives dignity or plainness. It is in nature, and should always be reduced to practice, that some parts of an edifice should be rich, and others plain; and the consequence is, that they happily set off one another. There is no objection to plainness, when the eye sees that it is suited to the occasion, and the variety between that and such apartments as are spacious and elegant, gives a lustre even to the latter: the plain decency of the humbler rooms, while it is proper, because it suits them to their purposes, makes them also serve as a foil to the others.

Thus much may be sufficient to mention to the young architect, in this place, concerning those ornaments whose foundation enters into the original design of the apartments; all other decorations we shall speak of hereafter separately: we are now treating of the building a house, and shall, in a separate part of our work, speak of its decorations.

Thus much then the student will at present take into his consideration, respecting the size and original designs of ornamental parts, in the planing of rooms.

He will first calculate according to his ground plan, and see that none of his rooms be too big for the house.

Next he will consider that though some, according to their use, are to be larger, and others smaller, yet that there be a proportion observed among them; a proportion of one to another. Let there be no room, for whatever purpose it is intended, so large as to be disagreeable to the rest, nor any one whatsoever so little as to disgrace the building.

The measures we shall give in a variety of examples; we are here imprinting on his mind the general idea of propriety, and shall bring it afterwards to practice. Chap. 12.

Lastly, let him consider where those ornaments are proper, which enter into this part of his design, and dispose them no where else. A skreen of columns may be fit in a dining-parlour, or an alcove in a bed-chamber; but these are ornamental parts which cannot be admitted in other rooms, and there is no time but this to regulate their disposition.

Having premised thus much with respect to the proper character, and necessary proportions of the several parts of a house, we may, with safety, proceed to the consideration of making the plan.

This is a very essential operation, and as it employs the first, so it shews the greatest skill of the architect. Errors in this are always seen, and are never to be remedied when the building is erected: therefore this was the place for giving those cautions by means of which they may be avoided. The lessons are short, and the precepts few, but let them be impressed deep in the memory of the student. Practice will render the whole familiar to him when he has been some years in business, but we would anticipate the effects of experience, and wish him to set out in such a manner that his first works may not be a disgrace to him in his riper years. This is only to be obtained by setting out with a proper fund of essential knowledge; and this we hope to lay before him, giving him the advantage of the experience of others,

C H A P. XII.

Of edifices without columns.

THE orders of architecture, with which we have so much at large acquainted the student, are the greatest, the noblest, and most ornamental parts of building; but there are many edifices in which they are not to be employed. Nothing gives a structure so much an air of dignity, but there may be a proper degree of it without them. The *Greeks* and *Romans* used them first in their temples and other publick buildings; and the taste has descended through all polished ages to the present, of using them not only on these occasions, but in large and elegant houses. *Palladio's* designs, which are so many happy models for future architects, abound with various instances of their different disposition; but in some places he has introduced arcades; and in others we see plain walls, under his skilful direction, making an elegant appearance.

We are not about to advise the builder to neglect these great and graceful decorations, for then it would have been needless to have entered so largely on their composition; but we would have him begin to build without them. In all sciences, the student should set out with the most plain parts, and advance by degrees to the more difficult; and the same should be observed here. He should first know how

Book III. to build a wall, who proposes in after edifices to enrich his work with the orders; and he who would erect a palace well, must begin with a cottage.

It is thus we propose to lead the young architect through the several stages of his profession; and, as we are here to treat of plans, we shall first consider with him those which are plain and simple without columns, and afterwards lead him to such as are more composed and enriched with the orders.

Let not the most established in his profession think this too slight a matter for his serious enquiry. We have instances of very plain, which are yet very good houses; and many very noble ones in which none of the orders are employed. These plain buildings are the most familiar, and in the general execution we see them with fewer errors; at least their faults are not so glaring: a moderate capacity will serve for them, and we have many among those of name in architecture who should never attempt any thing higher.

When columns are used there must be a knowledge of the orders, and a strict adherence to the rules that have been established concerning them; but, in plain buildings, all is free, and fancy being the proper conductor, there is no such rule upon which to arraign the builder of a fault. Indeed the eye will judge, and sometimes critically too, but when the censure is passed, the error may be defended, for there are no established principles upon this head.

Therefore although the architect of less genius may succeed in these plain buildings, the greatest is not to suppose they are unworthy his strict regard, or deepest consideration. When the common builder will give satisfaction, he will command admiration; nothing is so far from being ty'd down to a common method: for, there being no rule established, all is open to genius; and a pregnant fancy, restrained by sound judgment, may be for ever inventing something new, both in the elevation and the distribution of the parts.

It is indeed principally in these plain buildings the genius is to be indulged; and these alone yield an opportunity for novelty and original designs. In the orders, all is not only limited within certain boundaries, but all has been done perhaps that can be done: in the best pieces of this kind, an experienced eye sees whence the beauty is derived; or from what temple of the old *Romans* the column was copied; and when the utmost that human art or human industry can accomplish is done, it is more than probable the work is but an inferior copy of some great thing in the antique, whose image, always fresh in the memory, serves as a disadvantageous object of comparison.

It is therefore, instead of neglecting, we wish the best architects would bend their minds more to the variety and elegance that may be introduced in plain buildings; and we shall, in the succeeding chapters, at the same time, shew what may be done, and what ought to be avoided: what is fit to be attempted, and where to stop.

C H A P. XIII.

Of drawing the ground plan of an edifice.

A Piece of ground, we will suppose, is fixed upon for a house; the extent it is to cover is agreed, and the young architect is left to his genius to draw a plan of the intended edifice. No direction is given him, we will suppose, because we would see his fancy unrestrained; but he is to consider what kind of building will be most commodious and handsome, and is to design that on paper for the eye of the owner.

We will suppose this in the country, that we may leave him to the free use of his fancy; for in *London* all is restrained: however the plan will answer both purposes only by accommodating it to the spot in town, where it happens to be incompatible with that limited scheme of building.

The first thing he is to consider is the outline of the edifice; he is to study what figure will best lie upon the spot, will best fill it, or best become it; and under what contour he can dispose the best-proportioned rooms, and command the best lights.

This is so material a consideration, that we would have him weigh it maturely: we advise him to reduce his thoughts of many kinds to lines, and lay them upon paper, and afterwards examine them equally; consider not only which is best, most beautiful, and most commodious, but whether another may not be made from a composition of two or more of these better than either; or whether something may not be added to that which is best from one of the others.

All this is soon done, and it is a trouble extremely worth his while to take. A hand accustomed to drawing will very readily sketch out a variety of these figures, within the given space; and when he has compared, mixed, improved, and altered them, and has formed others from them, let him devote some hours in his closet again, to chuse the best, and to see how that can be improved.

In all this, though his hand trace only an outline, his mind must retain the idea of the disposition within it; the walls only are to be schemed upon the paper, but the mind's eye must read the several inner divisions.

When he has fixed upon the best outline, he must proceed to the distribution of the parts; and in this he will have occasion to consult all his first designs again. Something may be cramped in the figure, which he could not perceive till he reduced it to working, and this may be amended by some slight alteration in the general shape.

With respect to the figure of a house, a great deal has been said, but perhaps too little has been thought; more variety may be introduced than there is at present, but not so much as some have imagined.

Book III. The world have been amused with the sentiments of an ingenious but superficial writer very lately on this subject, who is for introducing an unbounded variety in this respect. He rallies the cold imaginations of architects, whose plans are limited to one everlasting figure, a long square, and proposes all that variety in its place, that is between the circle and the longest ellipsis, and between the triangle and the polygon.

It is certain that a building of a beautiful figure may be erected upon any of these plans; but a house must be commodious, and that limits the supposed field into a much narrower compass. While we propose variety in this article, we must caution the architect not to be carried away, either by the wildnesses of his own, or of other people's imaginations, into errors and absurdity.

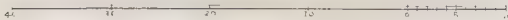
It is true that the present general form of houses is alike; and it is also true that although this be a very commodious one, it is not the only shape that can be so: convenience in a house is not limited to the figure of a long square.

All reasonable deviations from this will please, because of their variety; the care is, that we do not sacrifice convenience to the change, for that is not worth while. What is new always pleases on equal terms more than what is old; the elegant and uncommon will strike the eye that neglects the usual and vulgar form; and these singularities are the points at which the builder is to aim.

If any one would know how the publick will receive them, let him take his answer from the *bow window*. This, from its being uncommon, pleased extremely; those who built it where there was a prospect, were followed by people whose houses were situated where there could be none; and at present we see *Venetian windows* that look into stable-yards, nay that block up one another in the streets. Nor need we go out of the circuit of the new buildings in *London*, for a house where the architect has made two *Venetians* that block up one another.

Let this shew the student how any thing will be received that is out of the common tract; but let the absurdity which reigns in it at present teach him where to stop. After this caution, we may proceed to lay before him the variety that he may have in regular figures.

We have here given, to illustrate this subject, the plan and elevation of a house, in which there is some variation from the plain square plan. *Plate XXXII.*





C H A P. XIV.

Of circular figures, and their use in building.

THE figures which the architect is to regard in the making his plan are of two kinds, circular and angular; and under each of these heads there is a great variety. All these may be admitted in edifices of shew and ornament, but only a limited number in those intended for the reception of a family.

An author, much esteemed at present in *France*, and by many in *England*, endeavours to work up the fancy of the builder for variety by laying before him all the figures of each kind. This writer, whom I would name if he had named himself*, tells the architect, as before observed, that in the planning of a house, he may use all the regular geometrical figures, from the circle to the longest ellipsis, and from the triangle to the polygon of most sides: but much of this has been answered before it was written, for it is an error in principle to suppose all these figures suited to the construction of houses; indeed few of them are, and he who would adopt the rest must sacrifice com-
modiousness to the singularity of an external form.

It is certain there is a sameness in modern buildings which takes off a great deal from their merit; but before the student attempts the several ways by which they may be varied, let him understand those by which they cannot. Far from recommending all the geometrical figures to him, we shall shew him that most are improper; not affecting this upon the mere dictates of opinion, but giving the plainest reasons.

Mixed figures, composed of circular and angular, we shall consider separately afterwards; but here it is the business to enquire into the several simple ones of which they are to be composed.

With respect to circular figures, they have in nature their advantages and their defects; but, unhappily for this science, their advantages cannot in general be obtained, and their defects are always obvious and hurtful.

The advantages of a complete or entire circle are very great, and might seem to recommend it for a useful building preferably to all others, but the objections are not to be surmounted. It is the most capacious of all figures, the strongest of all figures, and of all the most united in its parts: this recommends it for holding a great deal, and standing a great while, and for great uniformity; and we must acknowledge that no form is more beautiful.

Therefore, if a great capacity upon the smallest piece of ground, a prospect of duration, or regularity and beauty, were all we required in a house, this figure would be preferable to all others; but the objections are unalterable and unsurmountable. A circle is the most expensive shape in building; it is of all figures that in which, though most space is contained, most room must be lost in the dividing it for a house; for the

N°. XXVIII.

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curvature

* It is published without a name.

Book III. curvature of the walls implies a necessity of this; and finally, it is of all figures the very worst for a proper distribution of light.

The antients knew this, and they governed themselves accordingly; they knew the capacity and beauty of a circular figure, therefore, far from rejecting it, they employed it to the noblest purposes. They knew the proper light for a circular figure must come from the top, and therefore they employed it for temples; their *Pantheon*, now the *Rotunda*, is an instance how nobly; but they knew it was not a shape for a commodious house.

This let the architect remember, and it will banish the circle from convenient and useful buildings, but it will leave the whole scope for it in temples and other edifices of beauty in gardens. Of these we are to treat in another place, and therefore no more need be added here.

This one rule must be remembered; a circular figure is fit only for such a building as is to have no inner division.

Having thus freely discussed the use of the circle, we come to the ellipsis.

This has been recommended in all its variety; but it is liable to all the objections which stand against the circular figure. Of whatever extent an ellipsis shall be, there will be the same want of propriety for a commodious house; there will be room lost when it is divided by the circular figure of the walls, and the same inconveniences with respect of light: nay this is a more unhappy figure in that respect, because it cannot be well enlightened, even from the top, as the true circle. That was the proper figure for temples, and not the elliptick, for this reason, and it was used accordingly.

Of angular figures, and their propriety in buildings.

THE geometrical angular figures are many, and they cannot be drawn in the most plain manner on paper, without affecting the eye in a very pleasing manner by their regularity, variety, and beauty. If the external appearance were all the architect was to consider in the planning his house, every one of these would recommend itself to his choice.

We have told him already that, in drawing the first outline of his plan, he must always have the idea of the inner division in his mind; and this will shew him how idle and improper those writings are which recommend them all to him for variety.

To begin with the triangle, which has the fewest sides and fewest corners of all the geometrical angular figures; this is utterly to be rejected. It is the weakest of all other angular figures, from the plainest geometrical reasons: and it is incapable of any tolerable division within, except into other triangles. We do not suppose any would chuse a house consisting of triangular rooms, therefore this figure is useless.

The quadrangular figure, whether the exact cube, or the long square, we shall treat of in another manner, and much more at large, because it is very fit and commodious.

As to the figures of more angles they are liable to great objections in the inner division; they will always entail more trouble upon the architect, and succeed less happily than the square. They are very useful in military architecture, where the corners serve for bulwarks, and the sides for curtains, but incommodious in the greatest degree in houses, built for the conveniencies of a family. Sir Henry Wotton,* who has proposed all these objections, mentions an instance of the pentagon being brought into practice by Baroccio, in a palace of the Farnese, at Caprarola. In this there is a circle inscribed within the pentagon, and that great architect has acquitted himself very happily in his contrivances for disposing the lights, and saving vacuities; but the author justly observes that it is a structure rather to be admired, than recommended for imitation.

Indeed all that we see there is how a great architect may get over the inconveniencies of such figures; and so far it may be of use, that if a person of fashion should have a mind to a building of such a figure, the student would no where so well find the best methods of managing it. But it is no more than making the best of a bad figure for a building, and he must be very idle who would wilfully create himself difficulties.

The inconveniencies of these several figures naturally throw the eye of the architect upon the square or rectangular figure, with the account of which we mean to close this chapter.

* Wotton's Elements of Architecture, Part I.

Book III. This figure is recommended by the precepts, and countenanced by the practice of all the great architects, whose writings or whose works remain; and it has many conveniencies and excellencies peculiar to itself. He must therefore have been an ill and an unsafe adviser to the student in architecture, who has endeavoured to pre-possess his mind against it, under the names of trivial and vulgar, and it is dangerous to regard him.

This figure, being composed of right angles, is stronger than any other, and there is none that admits a better distribution of light.

A perfect square is a plan on which a very good house may always be constructed; but a long square is preferable. It pleases the eye more, it admits more variety in the inner division, and it has every convenience of the other, with these additional advantages. The figure which we express by this name of a *long square*, in compliance to the customary manner of speaking, may be varied extremely in proportion of its length to its breadth. This will admit many schemes in the first sketches of the architect, and as we have, in general, observed to him that he is to keep in mind the inner division with the outward form, here is one more consideration needful, that is, the height of the building.

In forming the proportion of length and breadth this is an essential condition, and never should be omitted; for assuredly there is such a thing as one best proportion in the respect of length, breadth, and height, in a house whose plan is rectangular, though our writers have not yet established what it is.

A very good and very safe rule is, that the length be one third more than the breadth; but to tie the student down to this, would be to cut him off from the opportunity of variety. It is better to make the length in general less, than to let it exceed this proportion; but for this there is no absolute rule.

Of mixed figures, and their use in building.

B*Y* *mixed figures* the architect is to understand those which are partly circular and partly angular. We have rejected the circular alone from common use, but the objections made against them in that respect, do not hold so far as to denote them useless as parts, and under a proper management.

It is certain that in parts, as well as in whole buildings, they are liable to the same objection of loss of room in the hollowing of the walls; but when they make only a part of a building, this may often be born. The lights also fall in but inconveniently on this account; but there is nearly the same objection to those angular figures used for the same purpose. Things therefore standing, in this respect, nearly equal, the student is to consider the aspect; and this he will find often in favour of the circular form.

In the projecting parts of houses, we see angular figures used in some places, and round in others; when we examine within, it is to be acknowledged the difference is in favour of the angular; but it is not great: and without, the round projection has infinitely the advantage. There is a harshness in the angles in these little projections, and as they are generally parts of multangular figures, there is confusion; whereas in the round there is composure, and beauty, an idea of capacity, and an appearance of solidity and strength.

Upon these principles, and in this limited use, the student is to understand that mixed figures may be employed advantageously. The complete circles, or whole ellipses are not fit for an entire building, yet parts and segments of them may be introduced with beauty; and without any great inconvenience. In the same manner of the angular figures the triangle is the only one utterly to be rejected; for though those of more than four sides are not so proper for entire buildings, yet parts of hexagons, decagons, and the like, may be introduced in these mixed plans; and they will often be a proper means of giving variety.

The student may see the triangular figure brought into use in the same remarkable house where one bow window has been built to block up another; it will be a stronger lesson than all we can deliver in words against his following the practice.

The proper use of mixed figures in a plan may be often advantageous; and, under due caution and reserve in their adoption, they will contribute to the beauty of the outline; but this caution is needful, or all will run into error. It is certain that variety is the source of great pleasure to the eye, yet there is to be an uniformity preserved in buildings.

Book III. If this were carried into a rule, in the strictest sense, it would set aside these mixed figures; but, though the architect need not be so strict in the observance, yet he must not offend against it too notoriously.

A cautious mixture of right and curve lines may be allowed, and it will be a source of vast variety; this will give the genius room to display itself; and the restraint of judgment must lie over it to prevent the excess.

It is possible, by this mixture of figures, thus regulated, to vary the plans without end or limitation; and yet to preserve in every one of them a perfect regularity of parts. This will employ the extent of the mind; and he will always please who shall be able, on every occasion, to give in different designs for the same spot, and every one of them under the recommendation of something new. The eye hates an external sameness in building, as well as in other objects, and it is the business of science to take off the tediousness of that universal similitude, by introducing from this large source those limited articles of variety which reason admits fancy to adopt.

The uniformity that is a needful point in all regular architecture, though it limit the use of these innovations, yet does not utterly exclude them. Opposite as the terms may appear in words, they are not irreconcilable when we come to practice. It is possible that the parts of an edifice, though different in themselves, may correspond very well with one another: the only objection would be the variation being made too great, or the transition too sudden. This must be avoided, and under that limitation all will be agreeable; and he who shall be able to introduce this into his design, will find he has united the seeming contradictions: there will be variety in the parts, and yet uniformity in the whole building.

The excess and extravagance of variation is what the architect, in this case, must avoid: indeed it is not the variation, but the great degree of variation, that is the fault.

Here then is the latitude wherein the student is to compose his figures. He will find the long square, of all other forms, the most perfect in respect of convenience; but, from its too great simplicity, he will be induced to vary the outline: this he is to do by the use of angular and curved figures, which though when they are entire are by no means fit for a house, yet may be thus admitted to advantage.

C H A P. XVII.

Of ELEVATIONS, and their general proportions.

HAVING gone through the consideration of a plan, its natural restrictions, and possible additions for variety, we advance to the elevation, or upright, of the building. This is an article of less scope and compass than the former, but not of less necessity to be rightly understood by the builder.

As we have observed that there is in nature one length proportioned to breadth for an edifice that is preferable to others, though the architects have not yet established it; so there is, in this respect of elevation, a certain degree of height proportioned to the joint consideration of length and breadth, which is better than all others. This has not been established in the writings of architects than the former: it is possible some may have discovered it in practice, and form'd themselves upon the happy rule, though they have not divulged it to the world. In this case, it should be sought in their designs, or in the buildings they have erected; and of this we shall assure the student who will employ himself in the search, that though he should not be able to make such a discovery, his trouble will not be misapplied; for, by measuring and considering a great number of elevations in celebrated works he will become able to form such rules to himself as would not otherwise have occurred but from a long experience. He will thus accustom himself to a variety of proportional elevations, all good and pleasing, and by studying the advantages and disadvantages of them severally, improving upon one by what is better in another, and thus forming the elevation upon the parts as well as general extent, he will, very probably, at length, be able to establish that rule he could no where find; and will do himself honour, and the most essential service to the science, by publishing his discoveries.

The most essential of all beauties in an edifice, results from a just proportion; and in this respect, the height is one of the principal circumstances. When an edifice exceeds in height it is always preposterous; and when it is too low, it is mean. Nothing can give grace to the enormous tall one, nor can all the art of the architect ever communicate dignity to that which is too low. Houses are built, in some places, of six or seven stories, but they are always awkward and ungraceful; and we see more frequently low extended fronts, which disgust by their pitiful aspect.

When the impropriety is so great in either of these ways, the most unexperienced will distinguish it; and when it is less the judicious eye will still see it.

We are judges of this proportion in height when we look at a building, though we have not been able to lay down the strict rules for it; and as it appears in the edifice, so it will upon the paper. He must have a very poor degree of knowledge that does

Book III. not distinguish in a good draught those excesses and defects that will disgust him in the reality.

For every house then let the student propose to himself several heights, and consider which suits his own taste best in the lines; this let him follow, and set it down for his future use, as the proportion which, in this instance, seemed best for the given plan.

As the fixed point, in this matter of *general proportion*, is not known, there is no other guide for the student but a natural judgment and practice: he may, by varying his designs for every edifice, sooner acquire the advantages of practice, than by following only the same tract, and by studying and measuring the most esteemed buildings, he will have the benefit of the practice of others.

The eye is the great judge, as the point is regulated at present, and the more it is accustomed to the subject, the more delicately it determines of beauties and faults; but, by these instructions to the young architect, we would influence the mind to consider and judge of it: at present the whole is mechanical, but that would bring it within the scheme of science.

Few are aware of the advantages that would attend a more precise knowledge of proportions than people in general have at present. As there is no building that ever can be made to look well where there is any great error in this respect; so, on the other hand, the architect may assure himself that the plainest house will always have its beauty, and give a satisfaction to the eye, when it is built in a true proportion.

C H A P. XVIII.

Of the particular proportions of parts in an ELEVATION:

WHAT we understand by the general proportion of an edifice, is its uniformity, or proper agreement, in length, breadth, and height. When these are accommodated to one another, the whole will look well as a whole, but there still remains the consideration of parts. By parts here we do not mean the inner division of the fabrick, for we are treating of the external aspect, and in the manner all appear to the eye without. What is here intended by the particular proportion of parts is therefore the measure of those parts which appear in the outer face of the building: the care of these is too much neglected, or too little understood, by those who have some notion of the other; and hence we see houses in which the general proportions are well observed, which yet offend or shock the eye, by errors in respect of the particular parts.

A house is to be divided into stories; and, as this division is very plainly seen on the external part, it is requisite these be well proportioned, otherwise there will be an apparent absurdity.

Tenderness to builders yet living prevents our pointing out instances of houses, very tolerably designed upon the whole, but which are rendered ridiculous by this false division.

There is no rule established universally on this head; it is one of those things the builder learns by a judicious observation and experience, but as it is a kind of knowledge that comes late, we would put the young builder into a road for obtaining it sooner.

The method must be this: let him observe that there ought to be, in this apparent external division, what we recommended to him before so strongly for that within, a conformity of all the parts, first to the whole building, and next to one another.

Having established this as the point at which he is to aim, let him bring into his most critical view the models left by others: let him examine their excellencies and defects, and he will learn as well by their errors as their beauties. It is as essential to him to know what he should avoid, as what he should pursue; nay, that should be his first study.

When he has thus fixed in his mind a proper notion of what a regular and proportioned division should be, let him reduce his thoughts to lines, in the elevation of his present edifice. We suppose him to have drawn the outline of his plan and of his

Book III. elevation ; and, from repeated trials, to have pleased himself in the height, length, and breadth, as well as in the general figure. He is to take the same course here ; he is to mark in his first thought of a division upon the principles just laid down, and to examine its aspect with a severe eye ; we would have him a critical observer of the works of others, but a most rigid examiner of his own.

If the first thought please him let him not alter it, for often there is a happiness of invention in the first touches that no after-thought can mend ; but if any thing appear defective, let him vary it without ceasing, till he bring it to what appears to his own mind rectitude and truth.

When the first division is thus made into stories, let him consider the apertures or openings in each : there must be doors and windows, and as these are apparent and external parts, they now come under consideration.

These must be carefully proportioned ; first to the general aspect of the building, next to the stories, and lastly to one another.

Their proportion to the stories will serve as a rule, to judge whether they be properly constructed for the whole, and also, whether that division have been well made. It is a test to which the young architect brings his own design ; and it will either confirm his approbation, or shew he satisfied himself too easily in that division.

C H A P. XIX.

Of the ornaments of an ELEVATION.

LASTLY, the ornaments of the elevation are to be regarded. When the several openings are reconciled to an agreement in form and dimensions with one another, and are made perfectly to correspond with the stories to which they belong, and to shew the proportions as well of these to the whole, as of themselves to these; then this latter article is to be brought into consideration. It is much less than the others, but little as it is, an error in it may disfigure a very good building. Its trifling consequence, in comparison of the others, ought to make the architect more strict in his regard to it, because it would be very mortifying to see that work in which he had taken so much care of the essential parts, deformed by the ornamental.

There is this farther reason for his great caution on the present head; that faults in these parts are more glaring than in the others. The vulgar eye will always find them out; he who has not capacity to take in the proportions of a whole edifice, will see an error in these parts, and the builder may be sure that their faults will be spoken of, when the merit of the whole is buried in silence: such is the pleasure men find in speaking unkindly of one another.

This satisfaction, in the present consideration, may however result from what we have said here; that as the errors in the proportion of ornaments on the external part of a building will be very conspicuous to the eyes of others, so they will very readily strike his own. He must give way in this, and all other instances, to the first motions of his own disgust, and immediately alter that part of the drawing which occasioned them.

In this let us give the young builder one general caution, that he will be happy if he observe throughout; which is, never to justify to himself what appears, at first sight, to be wrong in the external part of a building. It is possible that some things which appear erroneous may be supported by authority or measure; but supposing them to be capable of this, yet let them not stand.

The exterior part of a building is intended to affect the eye; and whatever appears to be a fault, is one, in this article. Let him consider, that it is of no consequence that he is able to defend his practice in whatever appears amiss; he will not be at hand to give his reasons to every one who makes the objection. His point is, not to be able to answer objections, but to prevent them.

For these reasons, let him again and again reconsider and retouch whatever gives disgust to his eye; let him not spare the pains of alteration, for he is all that time pursuing the course of his studies. Alterations are easily made on the paper, but very difficultly in the work; and it is only by the considering many methods together, that he can, in these points where rules are hitherto wanting, distinguish what is best.

By

Book III. By these methods, and this care, our student will be able to produce a design for a house, the most commodious, and of the most agreeable form, that can be erected on that allotted spot of ground; his plan and elevation will correspond with one another in every article of proportion, and the eye of the proprietor will not fail to be pleased with a design, in which there is regularity in the whole, and a connection of all the parts: he may be sure that the drawing which has satisfied his own critical judgment will not disgust that of another.

The young architect will thus have finished his design, so far as the exterior part one of the edifice is concerned; but we must not quit this article without giving him needful caution; that he entertain a modest sense of his own knowledge; and support his opinions, if controverted in any part, with the strongest reasons, but in the gentlest words.

The proprietor of the intended edifice will have a right to please his fancy in the laying out his money, and it is fit he should be indulged, if he chuses it, even at the expence of propriety, in some lesser article, though not without being informed of it.

If he desire to have any alteration in the design, let the architect lay before him the reasons for what he intended, and the impropriety and, ill consequences of what he means to introduce: probably he will be won over by this to what is right, if not, the architect has done his duty in representing it to him, and he is to go no farther; let him at least drop it for that time, and leave all to the farther consideration of his principal, who perhaps will consult some other upon the point. There will be time enough to name it again before the bringing it into execution, and he will then receive the final answer. Let him not be obstinate, because he is in the right: the candid judge, when he sees a building in good proportion upon the whole, will not believe that he who was capable of going so far right, could fall into a gross fault; and therefore, though the error be obvious, he will charge it where it ought to lie, upon the arbitrary will of the proprietor, and not upon any defect in the judgment of the person who built the edifice.

C H A P. XX.

Of the exterior ornaments of houses.

HAVING named the article of ornaments, with respect to their proportions, in the exterior parts of a house, it may be of use to the young architect that we pursue this general consideration so far, through the several particulars, as may be needful for his present enquiries.

From the exterior ornaments in this place, we exclude the considerations of columns, because we are treating of plain houses, and are contriving what may be done without the use of the orders of architecture. That great addition will come in when we proceed to the more expensive works, and we have already explained the doctrine of the several orders so largely, that a few plain words will convey all we shall have to say on that head. We are here to consider only the common ornaments of the exterior part of a plain built house, and what may be farther done in that respect, exclusively of these expensive decorations.

In the first place, the divisions of the principal stories which we have already named, with respect to its proportions, must be marked by an even fascia, and this must have but a little projection. This done, the doors and windows may be decorated with their proper mouldings, and the building is to be crowned with a cornice.

Less than this may be done in a very plain house, and we shall shew that more may be done by those who chuse the expence, without calling in the orders.

In respect of these parts, the breadth of the ornaments of the doors and windows is to be regulated by their breadths, and by the rest of the parts, and the judicious and careful examination of these minute articles will always redound to the honour of the builder. The graceful design of the cornice will add vastly to the beauty of the building; this is an article treated at large elsewhere, it is sufficient to name it here.

When the decorations are judiciously adapted, they give a great deal of grace to the exterior part of a house; but when more is required it is easy to be added: the tops of the doors and windows may be covered by their several pediments, there may be also additions of carved work.

In all these the same care is strictly required, with respect to proportion; when they err in this respect, they cease to be ornaments: they are loads and patches upon the face of the building; they shew the defect more palpably than any other part, and they seem as if they did not belong to the edifice.

Book III. To illustrate this subject, we have given, in *Plate XXXIII*, published last week, an elevation of a house with a balustrade, upon a flat roof, and with plain fascias for the division of the principal stories.

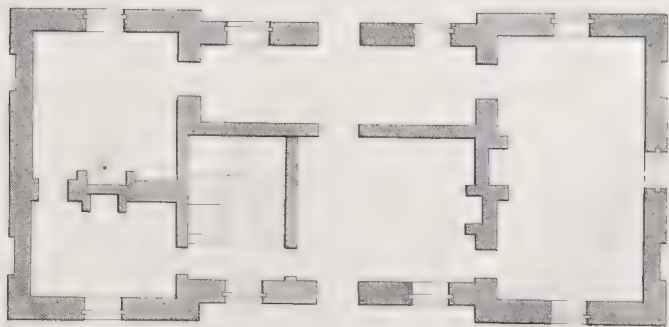
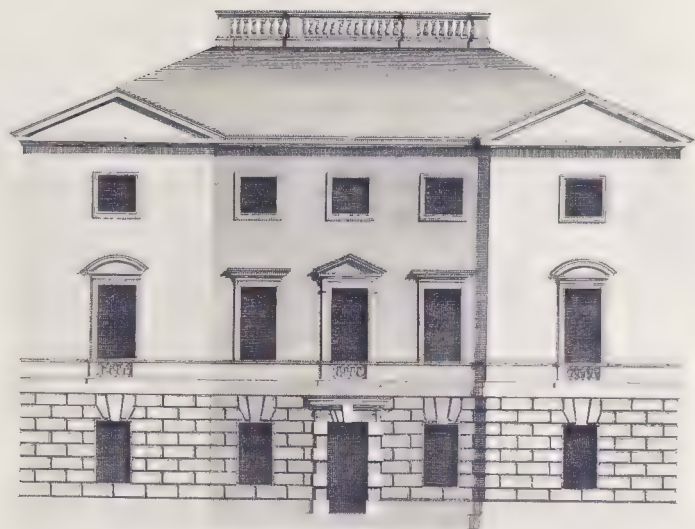
In the matter of decorations, the nicest care must be employed, for they lose their very nature when errors are committed in their construction; a house may look decent without them, nay, we have observed already, that perfect proportion will give it an air of grace and beauty.

This is first to be studied; this we have carefully inculcated, and when the architect has made himself a master of this, let him be doubly careful that he do not deform the structure, under the name of decoration, or bury the marks of propriety under irregular ornaments.

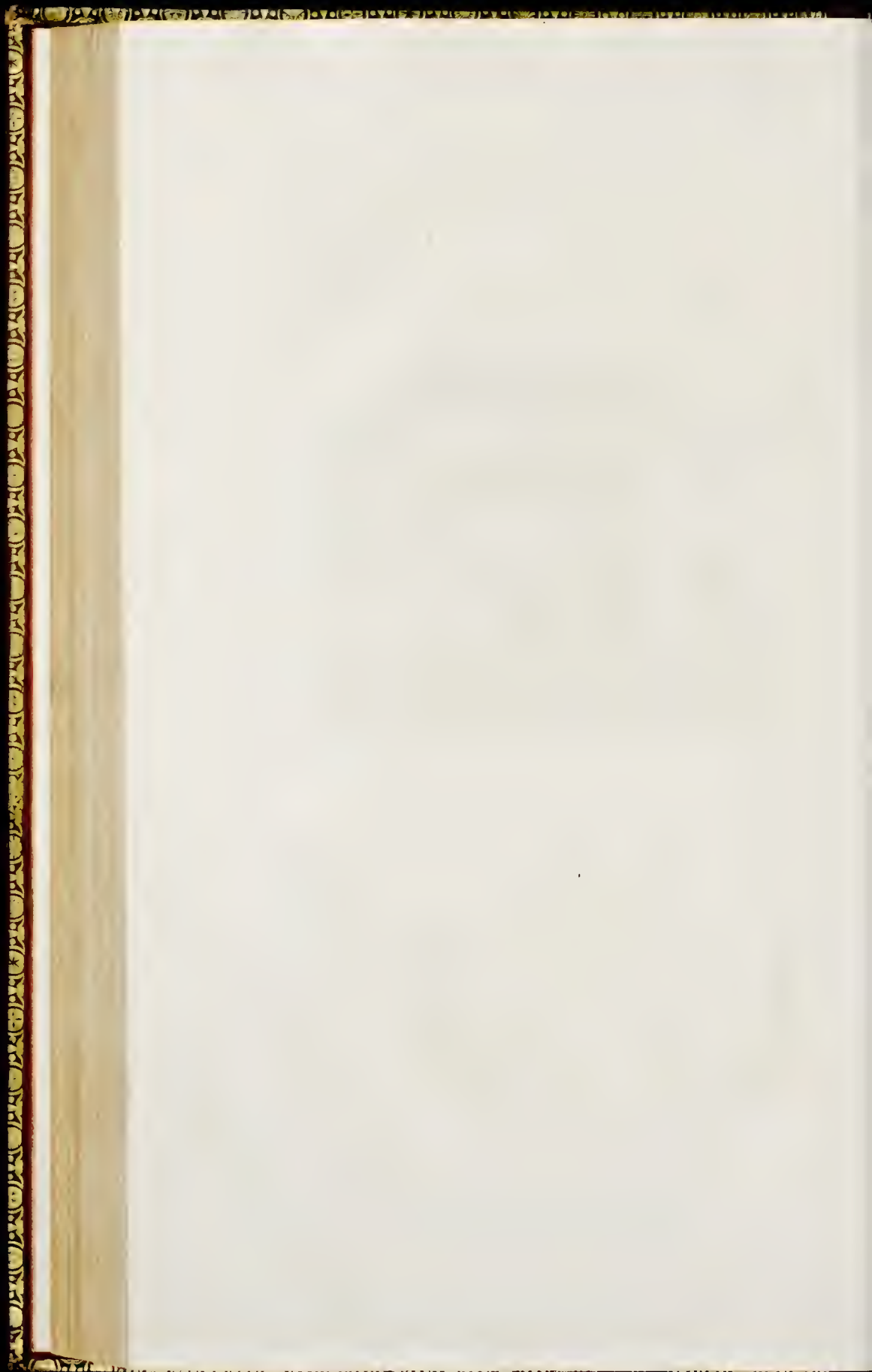
In the first place, all ornaments of this kind must be made to bear a due and exact proportion both to the edifice in the whole, and to one another. The more they are enriched, the greater nicety and care are required; for these additional articles of decoration must, in the same manner, be proportioned to the parts, and to the whole.

To this if we add that variety which may be given in a building of some extent, by the various elevation of different parts, we shall have laid before the young architect his great sources of elegance in the exterior part of a building. This article of decoration never comes in so well as in those structures where the architect has taken the advantage of a mixed figure in his plan; in that case he may give the different parts of the edifice a pleasing variation in height, and at the same time make them shew a perfect uniformity, by giving the same height to those in other respects of the same character.

These buildings of mixed figures are also the most happily suited for decorations of the additional kind; these we shall treat of at large, but have said the less of them here, as we are speaking of plainer buildings.



10 5 0 10 20 30 40 Met



C H A P. XXI.

Of the construction of the exterior part with respect to strength.

THE doctrine of walls we have laid down already, in a separate chapter of this work, among the essential parts of buildings, and need not add any thing on that head. Reason will inform the poorest judge in these things, that the strength of his walls are the material article in giving strength to the building, but there are yet a few plain and obvious rules to be given in this place, where we are concluding what we have to say on the outward part of a plain house, which must always be remembered. These are indeed so obvious, that one would suppose they need not be mentioned, but that we see them so often violated; and so common in the mouths of architects of the lower class, that it is strange they should be ever out of their memories, yet we see frequent instances that they are.

The first of these is, that, in the raising of the walls, he place solid over solid, and void over void: that is, the piers are to continue entire from bottom to top of the building, and the windows to stand over one another. Reason shews the propriety of this, and it is common as a maxim to a proverb; yet in *London* we see it frequently violated.

This first rule observed, the next is that the windows be not more, nor larger, than needful. This is a precept also established to a proverb: for, from the days of *Vitruvius* to the present, it has been a proverbial expression, that all openings are weakenings. Indeed, if the proper regard be shewn to the caution we have given before of proportioning the parts to the whole, the article of bigness, in these openings, will be determined by that; but their number still remains a point of great concern.

In this, custom from time to time has differed, but judgment has been less employed than fancy.

At one time our houses were, in a manner, all windows; the piers between them were so slender, that one wondered how the fabrick supported itself. From this error, which arose from a desire of abundance of light, we fell of late into the other extreme of making the windows too few, and too small. In this our builders followed the practice of the *Italians* too closely, not considering the difference of our climate. All imitations must be guided under the rules of judgment: it is so persons of genius follow the best examples, otherwise they are no better than mimicks, a very paltry kind of imitators; that may be proper in *Italy*, which will be very wrong in *England*, and the present practice is an instance of it. It is true that our windows were too numerous and too large, because they weakened the fabrick in that condition; but it was possible to err on the opposite side, and these improvers did it; not that they failed to avoid that error, and give the building strength, but they made a great mistake, for they shut out too much of the light.

Book III. In *Italy*, it may be proper to shut out the sun in a greater degree than it can be here, because in that country the air is clearer, and the natural light is much greater; the *English* air is often thick, and the sunshine is less constant. This should have been considered in the improvement, for the distribution of light is a thing very essential in a building, though it be one our common builders very rarely take into their consideration.

In the houses of the common size for moderate families in town, which, in the old way, used to have four great windows and a slip, our practice, in the reforming of this article, allowed three, and this was much more proper; but, at the same time, the builder, forgetting proportion in his earnestness of improvement, when he had reduced them to a moderate number, made them too small: the rooms were dark, and the house on the outside, though it looked different indeed from the other, yet was equally unpleasing: the first had resembled a lantern, the brick-work serving only as ribs to hold the glazing together; the other resembled a prison, where the windows were only holes to let light into separate dungeons; the one was a house of glass, the other a heap of brick. Moderation is the rule of pleasing, and that they had not yet found; we are, in general, improved in this article, but there are some who follow the old method introduced by the first improvers too strictly.

In many houses of this size, the builder now puts but two windows in front, and, where the extent is not too great, it is very proper. The pier between these is large, and gives great strength to the building, and it is capable of receiving better and nobler furniture, without more expence: one glass and one table does in this dining-room, in the place of two, and the effect is much finer: but this is attended with some inconvenience for want of room below.

The windows, in this case, are to be made larger than they would otherwise have been, and the breadth of the pier between very well suits with this.

We have of late also fallen into the method of retrenching the wood-work in our frames of sashes, in a very happy manner. Those thick bars we used to employ hurt the eye, and obstructed a great deal of light; they made a large window resemble a number of little ones: the intent is, that as much glass should be seen, and as nearly in a continued body as possible; this broke in upon it.

Our present use of brass, for frames of sashes, instead of wood, is a very elegant improvement in the article of windows; but these frames are expensive, and our people, taking the hint from them, have found the way to make them of wood now, with great strength, though no great apparent thickness.

This respect being had to the number and bigness of windows, in houses of ordinary size, we are to caution the young architect, that when he is to build a larger, he is to consider in the first view of encreasing his windows, not only in number, as some have done, but in size. A great edifice should have all its parts great; the windows are to come within this designation, and the encrease in number is to follow that in dimensions; this is the general rule, but here again comes in the former, as the ground-work of all, which is the proportioning of them to the size of the building.

Lastly,

Lastly, we must caution our young builder never to bring his windows too near the Chap. 22. corners of the building, nor to make any opening there. This will weaken that part upon the strength of which the firmness of the whole depends.

Thus much, respecting the general dimensions of windows, we have thought necessary to place here, for the finishing the consideration of the design of an elevation. Their particular proportions and ornaments are to be treated of separately in another part of our work, according to our plan. We have gone through the consideration of the outline of the building, and are now to lead our student to its inner division into apartments appropriated for various purposes.

C H A P. XXII.

Of models for the compartition, or inner division, of a house.

OUR architect has now marked out the form of his edifice, and determined its elevation; he has made his apertures with discretion, and contrived they shall let in enough light to the extent of the case, without impairing the strength of the fabrick; and he has proportioned them in number and dimensions to the building. He can shew his proprietor a surface, and he is now to proceed to the division.

Lines and figures answered very well for the exterior part, and for the outline of the plan, but more substantial matter will be better here. A model in pasteboard, or a slight one in wood, will answer the purpose with much more certainty, and be much less liable to deceive, and much more intelligible to the proprietor, than a figure upon paper. This is the advice of all good authors, and it should be the practice of all skilful and honest architects; we are used to see this done for great buildings, and there is no reason why it should not be for the least; the charge will be proportioned, and therefore in small undertakings will be little, and it will always give satisfaction to the proprietor. There has been a custom, when great works were to be undertaken, to bestow a large expence upon models, but this is frivolous; it is employing fancy upon a work wherein all should be the effect of judgment; the model is not to be admired in itself, but to convey a distinct idea of what will be admired in the house: its plainness therefore should be its recommendation. The imagination of the proprietor is not to be captivated by ornament in this little piece, but it is to shew him what is the intended division of the house, with perfect plainness, that he may see what to approve, and wherein to propose alteration.

The bigger such a model be the better, because the parts will be the better understood by an unexperienced eye; and, as we advise perfect plainness in it, the expence will be trifling. It is a very needful charge, and one the sparing of which will commonly be severely repented in the carrying on of the building.

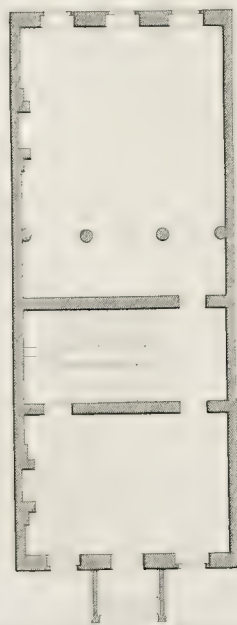
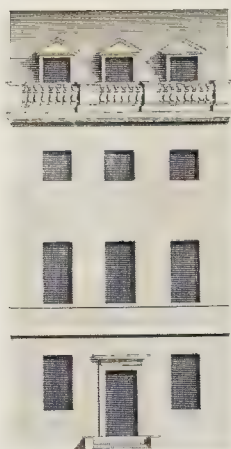
Book III. We are proceeding to the division of the plan into apartments, but we are to enter these through the principal door; this therefore must first come under our consideration. Most have treated of the doors and windows of a house under one article, but it is wrong. The principal door of which we are here to speak is a thing quite distinct in its nature and office, and demands a separate consideration.

The confusion that has been introduced in the minds of young builders by writers treating these subjects in this manner is very great, and if any one would see how natural it is, from this common method of treating them together, let him turn to a late celebrated dictionary.

That ingenious author has collected what he thought proper to deliver on this subject from the little treatise of Sir *Henry Wootton*; and, falling into this confusion, has faithfully transcribed, under the article *Door*, all that ingenious author has said of *Windows*.

We do not write this in censure of an author whose labours have their use, but to caution our young builder that it is not in such writings he is to look for practical instruction.

The consideration of a principal door is so essential, that we shall treat of it singly, and shall recommend the care of it to the architect's most serious thought. It is an article in which, if any error is committed, it is obvious to the first eye that is cast upon the building; and it is an unlucky one, for this reason, that it will put the vulgar in mind of the builder's stumbling at the threshold of his undertaking.



10 20 30 40 feet

Robt. D. P.

C H A P. XXIII.

Chap. 23.

Of the Door of a house.

ONE would suppose nothing could be so natural, nor any thing so obvious, as the situation or place of the principal door of a house, yet we see errors committed in it daily; and often very gross ones. The principal door being the entrance to all the apartments, and the passage from them all, nature and reason place it in the centre of the house, yet we see this practice continually violated, in large as well as smaller edifices.

In those little common houses where the extent of the front is limited to a few feet, and there is a necessity of a certain number of apartments, some excuse may be made for throwing the door to one side, though nothing can be said in justification of it; but in large and elegant edifices, it is a practice that admits no apology.

In the common run of houses in *London*, the old trodden path is universally followed, of placing the door at one side, and making a passage parallel with the fore parlour.

This passage encroaches, in some houses, upon the parlour, and spreads into a kind of hall; and, in others, the parlour encroaches upon that, and squeezes it into an entry. When it is determined to keep up this old way of distribution, it is best to make the passage moderate, for it is ridiculous in either extreme; but a little judgment in the builder may establish a new method of distribution of the inner parts of the house. A fore parlour is a room of very little use or value in a small house in *London*; it is too near the street, and too much in the way of disturbance from the entry: it would be more agreeable to the generality of families to have this whole part of the house, to a small depth, thrown into a hall, by which means, with a moderate skill in the science, there may be a good stair-case, and an excellent back parlour for dining, free from all inconveniencies and disturbance, and better than the fore parlour could be,

This would be a method of bringing the door into the centre of the house, even in these small buildings, which it always should be; and the flight of steps to it, and spreading of the rails from it, would in this case utterly take away the confined and mean look it has at present. A house of this construction is represented *Plate XXXIV*.

The reader will see by this, how necessarily the consideration of a door is separated from that of windows, and how connected with the article of the inner distribution or partition of the plan.

In large edifices, where there is extent of ground, and where every advantage is before the architect, he is unpardonable in not fixing the door where it should naturally stand, that is, in the centre of the edifice; yet we see this often omitted in great houses, nay in palaces.

The

Book III. The principal entrance, being in the centre, naturally leads to all the apartments : when it is placed elsewhere one is confounded.

Where there is a court before the house the principal entrance into it ought always to be in the centre of the front wall, and the principal door of the house ought directly to face it. We see this rule frequently transgressed.

Two gates are opened at the two sides for the entrance and passage out of coaches, and the principal door of the house fronts a dead wall ; where the wall is low, and the first story raised by a large flight of steps, this is more pardonable ; but, in any case, it is an error in the very principle of building. If these two gates be necessary, let them be opened in these very places, but then let the front wall of the court be of sufficient extent, and let there be a central gate larger than either.

The ease, freedom, and readiness, of going in and coming out, are articles of great concern, and nothing should be permitted to interrupt them.

We have, in *London*, many instances of these side openings in the walls of the court, without any central one ; and we have one very striking instance of placing the door out of the centre. This errs both in proportion and situation, and must be named as a caution to the young builder.

The house is in *Grosvenor Square* ; the edifice is large and conspicuous, but one is puzzled to find which is the way into it. It appears a house without a door, and when the eye is cast upon the little entrance at one side, one scarce knows how to suppose it is the door to that house ; it seems to belong to the next.

This is a practice contrary to reason, utility, beauty, and proportion ; yet we see it too common in places where it is yet more conspicuous.

The reason the builder assigns for it is a very plain one, and would have its weight if the inconvenience and blemish were not too great for utility ; he says, that placing the door in the centre is taking away the best part of the house to make an entrance to it, and that the rooms may be larger, and the chain of them better continued, when it is not interrupted by the passage.

In the first place, this practice contradicts the fundamental rule of proportion we have first established, and which should always be held inviolable ; a great house should have all its parts great, but this is impossible on the present plan, for the door must be small that is thrown into a corner.

The principal entrance to a house should be one, not more ; and this distribution renders that rule impracticable, at least in the appearance, which is, in architecture, a thing greatly to be considered.

When the door is in the centre, it is naturally one, for there is no place for another. But when, according to this practice, it is thrown into one of the corners, or one of the wings, there must be another, either in reality or appearance, to answer it on the opposite side.

When a stranger advances to a house of this structure, he is shocked with a great blank in the centre, where he naturally expects a door, and where no decoration is so proper, because none is so natural; and when he perceives the two doors at the two corners, it is not easy for him to know which is the way into the edifice. Chap. 24.

There is a poor confined inhospitable look in this kind of house, and it always looks blank and naked in the front, whatever be the decorations. It is certain the apartments may be the better for it, but there is an appearance of being stinted and reduced to shifts: one would not think the proprietor had generosity of spirit, or the architect true taste, who found themselves obliged to take in the vestibule to enlarge the apartments.

For these plain reasons, it may be laid down as an unanswerable rule, that the entrance, or principal door, of a house ought always to be in the centre; and that we must content ourselves with this string of unbroken or uninterrupted apartments in the upper floor, and even there it is often attended with great inconveniences.

C H A P. XXIV.

Of the general distribution of apartments.

HAVING fixed our door, we may proceed to the compartition or division of our plan; but, as a first consideration, we are to determine the distribution of the several apartments in general according to their condition and use. We are not to take the *Italians* as our perfect model in this article, because they adapted their edifices to their country, and so must we; this is the caution, and the only caution, requisite on the present head: their rules were always excellent, and their practice masterly, for their own climate, but, before they are put in practice with a literal strictness here, let the builder remember that there is a great difference between *Italy* and *England*. We shall assist him in this matter by the manner in which we shall deliver to him their several precepts: such as cannot be useful here we shall omit; such as require to be appropriated, we shall accommodate to the climate of the country, and genius of the people; and such as are universal, and suit equally all places, we shall deliver as they stand. We are now entering on a part of the work in which their practice and their precepts will be extremely useful; and having once premised this caution with respect to the adopting of them, we shall proceed to the several instances. We hope that, by following this course, architecture may be improved greatly more than it is at present; and, under these restrictions, more happily transplanted into *Britain*.

Book III. With respect to this general distribution of apartments, *Palladio* lays down one excellent and universal rule; which is, that in all buildings, the most beautiful and noble parts should be placed most in view; and those of a meaner kind as much concealed from sight as possible. This is one of those rules which is universal, for good sense is the language of all countries; yet we see this miserably transgressed.

In large houses there is the greatest convenience for this, yet in these we see it most violated.

Where the proprietor has spirit, and the chosen spot allows of a due extent, the house should have a court before it, and a garden behind. These are the edifices in which the distribution of apartments is principally to be considered, because it is in these the builder has scope for his genius; it is therefore these of which we are properly to speak here, and on this first general distribution will depend the subsequent division of the plan. Though it is needful to speak of large houses on this occasion, because there are in them only all the variety of apartments, yet so far as smaller houses are concerned in this distribution, all that is here said may be transferred to them. The young architect will here find all his subject, and he may take into consideration, with respect to every edifice, such parts of it as are concerned. In smaller houses in the country, less will come into consideration; and in the common kind of houses in *London* very little, because they are naturally cramped for room, and ty'd down to a particular situation; yet, even in these, there will be found use for those rules established upon good practice, in those which are largest and most free; for every house has its apartments of separate kind, and its conveniences, such as they are, and upon every house the sun must shine in some direction.

To pursue therefore this subject, in such places as afford scope for it, the offices, which will be numerous in proportion as the house is large, must be disposed where they shall be least observed: where the building is of so large a kind as to have wings, some of them may be disposed in them, though all cannot conveniently be there. In other cases the lower part of the house is to be appropriated to them.

In the common way of building in *London*, they are all placed under ground; but this is unwholesome, inelegant, and inconvenient.

Here then comes in the use of what the builders call a basement story; this is the lower floor of the house altogether; or though not buried under ground entirely, it is let in some feet below the surface, and is usually and very properly built in front with rustick work: the first apartments are thus raised some height above the ground, and a flight of easy steps leads up to the principal door.

This is an elegant and very commodious manner of building; there is something of dignity given to first apartments by the raising them above the level of the ground: they are more wholesome also as they are more out of the reach of damps; and the lower floor which conveniently holds all the common apartments, keeps the servants near the body of the house.

The flight of steps also is a very great ornament to the edifice, whether they be plain or more decorated; and when this basement story is faced with rustick, it gives an air of solidity to the superstructure; it looks as a rock upon which all the rest is raised. Chap. 24.

Where there is a garden of tolerable extent, some of the principal apartments, supposing the situation proper, may be very conveniently placed in the hinder part of the house. They will by these means be freed from noise and disturbance, and they will have a good light; the garden will also be a good prospect. Into this the best entrance is by a door in the centre, opposite to the great door of the house; but if the string of uninterrupted rooms be much desired, it may, in this part of the house, be had by placing the door to the garden at one corner; and the principal front door may still have its proper place.

In these large houses, as there will be numerous rooms, they may be suited to the seasons of the year, as well as to their several purposes. Thus rooms for summer may be placed toward the north, and winter rooms to the south and west, because we seek coolness in summer, and in the winter as much sun as we can have.

Those rooms for summer should also be large, and those for winter small, for the same plain reason, that a smaller room is easier warmed, and that a large one is always more airy.

So plain are the directions for the general distribution and structure of rooms, and yet nothing is more necessary than the laying them down at large, for they are continually violated.

The *Italians* are very exact in this distribution of their houses; they have rooms fronting the east, which are their favourites for spring and autumn; and they always contrive to have them face gardens, or extensive grounds where there are trees. In both these seasons there is great beauty in this part of nature; the leaves of trees have a fresh and lively green at the time of their first unfolding, which they lose in a few weeks, and never after recover; and toward autumn they have a variety that is not found at any other season. All leaves change colour as they fade, and this they do variously according to their kinds, some earlier, and some later. This gives the autumn a colouring unknown at any other season: painters understand this, and are fond of it in their landscapes, and why should not we be as pleased with it in the reality? All their pencils are faint to nature.

There is the same kind of advantage in the western situation of summer rooms, though from another source. They command the setting sun, where they are not blocked up, and this is a source of beauty beyond painting, and beyond all else in nature. The great luminary of the heavens dropping gradually below the horizon is a noble object; and the paintings of the clouds, during the succeeding half hour, are very beautiful and varied every moment.

Book II. An eastern situation is of all others the most proper for a study, for the morning is the time for resorting thither.

As the apartments of the nobler kind have all their proper place, provided other circumstances so favourably concur that it can be chosen, so the meaner below have also their proper situation: the larder to the north is an everlasting rule, and upon the same principle of reason all the rest are to be situated according to their purposes.

All this general distribution is easy when it is thought of in time, but the unhappiness of our architects is, that they generally neglect it till it is too late to mend their error.

This general distribution must come under consideration before the inner comparison is made, because the situation we see has a right to some regard in the structure of apartment. We have endeavoured to reduce the several parts of architecture to method, that the student, taking them into his plan as they naturally rise, may avoid the disgusting necessity of breaking the thread of his study, to turn back for something overlooked in its right place, or the worse error of seeing in the building some mistake that should have appeared to him in the plan.

With these precautions, we hope the danger of such errors may be avoided, and our student, having considered his plan and elevation in all their lights, and with respect to all their conveniences, may now go to work upon his model, to divide the space into rooms, according to these general admonitions.

C H A P. XXV.

Of the compartition, or inner division, of the house.

THE architect is now to consider his vacant plan as a space to be divided into rooms, which must have passages for getting at them, and a stair-case for rising to those of the upper stories.

With respect to the height of the first apartments above the ground, as it is in itself a great advantage, so it will be the greater the more it is in degree, within proper limitation. Ten foot is the least height the basement story should have in a good building: and, at a medium, we may give fourteen as a very good height. Let the builder remember the great rule of proportion in this matter; let him consider the general height of the edifice before he fixes upon the proper height for this part, for all parts must be calculated according to one another, or there will want that uniformity in the whole which is the first and greatest grace in all buildings.

On examining the best houses in *Italy*, in this respect, we shall find they have allowed a considerable elevation to the first story, and that they have made a noble use of the advantage. Fifteen foot is a common height of this from the ground, which we generally make upon the level with it, and upon this they build the rest. This basement story contains all the offices, except only the cellars, which are sunk considerably deeper; and, upon the whole, it is vastly advantageous. The building has a loftier air at no greater expence, and every part of the house where the company can sit, is removed out of the way of all annoyance.

This general assortment of the house being determined, the next consideration is the place of the stair-case: for that is a point always of great importance, and in many cases very ornamental.

A good house should always have two stair-cases, one for shew and the use of the company, the other for domesticks. This latter should be thrown behind, but the other is to be shewn; and upon the proper placing of it depends, in a great measure, the judicious disposition of the rest of the house.

We shall, in a succeeding part of our work, treat of the structure of stair-cases, and their ornaments; we are here only treating of the division and distribution of the ground, and of the place for a principal stair-case: a thing not sufficiently understood, mistakes concerning which have spoiled many an excellent house. The first consideration is to place it so that it may not obstruct or disturb the order of the rest of the building; and, when this is found, the next concern will be to see that nothing obstruct the stair-case. The place of the stairs must be first marked out in a plan for this reason; and when the principal door of the house is as it should be, in the centre, the stair-case should present itself immediately beyond the hall.

Book III. It has been at one time held a rule, that nothing should obstruct the sight of this part of the fabrick; but the practice at present is, in many elegant houses, different; the stair-case is shut in: custom makes this please, and something may be said for it in point of warmth and cleanliness, but the method of letting an elegant stair-case present itself is better: it is free and bold, and agrees more with a building in a noble taste than the enclosing it, which, whatever can be said in its favour, has a confined look.

There is often an air of space and room in throwing back a stair-case; and this may be done to such advantage in a moderate house, as to make it seem much larger than it is, by a great part of it being seen first: but still the stair-case must present itself boldly and freely to the sight; otherwise all has a confused and poor aspect. It looks as if the house had no good upper floor: and there is the same disadvantage in this hiding of it, as there is in misplacing the door of a house; it is as bad not to know how to find the way to the apartments, as not to find it into the house.

As to the situation of the stair-case, with respect to the principal door, it is a point much disputed.

There is in some edifices, no disadvantage in making it face the door, and bringing it very forward; in others, as we have shewn, there is great convenience and beauty in throwing it back, but in the same direction straight before the door: the advantages in this case being no less than the gaining room, and representing the extent of the house larger than it is. Some, on the other hand, prefer the placing the stair-case on one side, and there are examples of buildings very beautiful in this way. Those who are attentive to little things, say that it should, in this case, be on the left hand side, because it is the left foot that is first naturally lifted up on a stair-case: but this is a trivial circumstance when there are larger considerations.

The French, in general, are great enemies to the placing stair-cases directly before the door; they have an instance of a very bad one in this situation in one of their palaces, and seeing the inconveniencies occasioned by that, they suppose them essential to such a situation; but we can shew them some instances in *England*, and *Italy* affords many, in which stair-cases are thus placed, and the whole building very convenient.

Let the architect, whether his building be larger or smaller, keep in his mind the general distribution of the whole, while he designs his stair-case, and he will find he may generally have his choice of placing it either in front, or sideways, as he chuses. It is to be allowed that the stair-case in the palace of *Luxembourg* has many inconveniencies; it is heavy and dark, and it takes up the place of the entrance; cutting the door into the gardens in its height; but though these are the inconveniencies of that stair-case, and it is placed direct; yet they are not necessary consequences of such a situation, but the result of very ill conduct in the architect in this point. It was an error he committed in the compartition of the edifice, and it is therefore we name it as an instance of caution here.

In considering the place for his stair-case, the architect must have two things in his eye; the giving it a *good light*, and allowing a spacious *landing-place*. Chap. 26.

The window for the stair-case should be in the middle, and it ought to be allowed very large, that there may be a sufficient light, and that equally diffused: and the landing place ought to lead to the best apartments in a plain direct manner, and to leave space and room for decoration.

If the architect find it convenient, in a large building, it will be an article of great elegance to divide the stair-case into two flights, which going up, one on each hand, shall unite at the top in one common landing-place. This we name here, because it may be essential in the forming the design of the division of the house, and distribution of the apartments; we shall speak of it more largely when we come to the construction of this part of an edifice.

C H A P. XXVI.

Of the distribution and proportions of rooms.

OUR architect has now considered the place of his principal stair-case, and, we will suppose, has marked it faintly in upon his plan; nothing interferes now with his division, or compartition, of the whole into rooms.

In this place, let him deliberate before he begins; we have advised him always to keep in mind the proportion the parts are to bear to the whole; therefore let the extent of his plan be his first general guide for the construction of his rooms.

As these are to be for various purposes, they must accordingly differ in size, and in this let him keep also in mind the subordinate proportion they are to have one to another.

This considered, he may range his design of rooms under the names of three kinds; large, middling, and small; and whatever he on this head first lays down to his own satisfaction upon paper, let him afterwards execute in the plainest manner in his model; that the proprietor may understand it, as the work proceeds, as perfectly as himself.

Two things he is to aim at in the distribution of his rooms; that the whole building may, by that division, be rendered *graceful* and commodious. The article of gracefulness will depend upon the proportion they have, 1st, in themselves; 2^{dly}, to one another; and 3^{dly}, to the whole fabrick: their commodiousness will arise from their being properly disposed, and having a free communication.

In the planning out the several rooms, the architect must not forget, on any occasion, to make the best use of all natural recesses for closets; and he must contrive for them where the disposition of the plan does not so readily throw them in his way.

Book III. There are a multitude of things that must be always at hand, and never in sight; and these are what furnish closets: nothing can be more needful than a place of reception for them.

The commodiousness of a house consists, in a great degree, in the variety and proper number of rooms; therefore let the architect avoid reducing their number to give them a greater magnitude: for that, beside rendering the edifice inconvenient, will make its parts disproportioned. When they are thus properly planned in number, and the communication well established, the house will appear airy and larger than it is.

In large houses, where there is a garden behind, the best disposition possible is to throw the whole first floor of back rooms into a string, or suite; these should consist of a saloon, an anti-chamber, a drawing-room, a bed-chamber, and dressing-room: the windows of all these being to the garden will be very pleasant; and the looking through the whole range at once has an air of magnificence and elegance.

There must be closets to these; and a water-closet, far removed, and connected by a passage, is a useful addition.

Many object the inconvenience of this disposition of rooms, from the necessity of passing through one to go to another; and it would be a great one if it were not easy to be remedied: but the builder, foreseeing this, must contrive passages into them from behind.

The architect engaged in a large plan should have this distribution in his eye, and arrange his rooms, and cast his partitions accordingly; and foreseeing the inconvenience that would attend the needful passage through all of these to get at the innermost, he must contrive secret ways to them all. In the most cases this may be done without much difficulty, proportioning them for the service, and by this means there will be always convenience enough of getting at them, and at the same time the eye runs through them all at once, and the elegance, decoration, and furniture of the principal part of a house are thrown into one view.

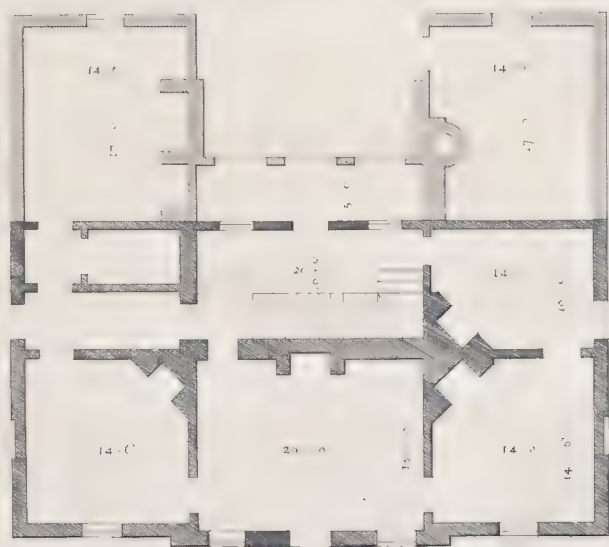
Sir *Henry Wotton*, who is an enemy to this practice, yet is obliged to own that it is frequent in *Italy*: it may be accused of ostentation, and it throws the whole house too open. These are its defects; but the intent is shewn.

In front may be the dining-room, and other elegant apartments.

This is the foreign method of casting the rooms in great houses; with us the distribution is more easy as we shall shew in the succeeding plans.



Entrance 52 feet



C H A P. XXVII.

Of the proportions of rooms.

WE have spoken of the three sizes of rooms; and their proportion to the whole edifice, and to one another; but there remains yet a third kind of proportion to be considered, which is that of the several dimensions of the room one to another. We have hitherto considered the room as a part of the house, and had every necessary regard to that whole in the eye; but we now suppose the architect has marked in the several apartments into his ground-plan, and is about to transfer them to the model; therefore their size is severally adjusted, and there remains no consideration but that of their measures respectively to the space each is to occupy. Now as that is not so certainly concluded, but that it may be a little altered if found necessary, one being made to give way to another, the architect is to consider them as marked in, and to adjust their breadth to their length, and their height to both.

This is as nice a circumstance as any in the whole compass of the science, nor is there any on which writers have established less certainty.

The proportions of length and breadth are much easier to be ascertained than those of height; for the former we have rules from the works of the antients, but in this other we have none.

In the antique the rooms were of two general proportions in respect of length and breadth, not that these were universal and unexceptionable; fancy amused itself in this as other instances, and none have indulged it so much as those great architects. The two proportions however that were accounted most regular, and were most universal in their works, were 1st, that in which the length and breadth were equal; and 2dly, that wherein the length was just twice the breadth. These were the standards of propriety in their square and long square rooms; and we know by repeated experience, that these are measures which suit very happily with one another. This we see established into a kind of law by *Vitruvius* *.

What comes nearest to a certain proportion in their accounts, with respect to height; is that in a room twice as long as wide, the length and breadth were summed up together, and the height was determined at half that measure.

Thus a room of twenty foot long and ten wide, was made fifteen foot high.

These seemed their most established proportions; but they often varied them.

* *Vitruvius* l. vi. c. 5.

Book III. From their time rooms have been made of a variety of proportions, and many of them very happily; but we, no more than the antients, have yet any one rule for what is best of all.

This is the more singular because it is a business of mere mathematical quantity, and, one would think, might be ascertained without much difficulty.

The rules the moderns have established, or endeavoured to establish, are not so plain and simple as those we have named from the antients. Some square the breadth, and then drawing a diagonal from corner to corner of the square; they give this as the best measure of the height. This and other such measures have been used by many, but none of them universally received. *Michael Angelo* was the inventor of some of them, for he was one of the first who ventured to establish any proportion not found in the antients.

The form and manner of working the ceiling makes a natural variation in any given height of a room, we shall therefore recommend it to the architect always to fix upon the form of this part, before he calculates the height, and to vary that proportion accordingly.

As flat ceilings are the most universal we shall first mention these.

Palladio lays down a rule for rooms upon the first floor with flat ceilings, which is, that their height be equal to the breadth, from the floor to the joists.

Others allow more than this, in various proportions; and though *Palladio's* be a very good general rule, yet more is better. Some have allowed less, but that for rooms upon this floor is wrong.

Upon the second story *Palladio* varies the height by a considerable reduction; for he orders that it be less than the breadth of the room by one sixth.

When rooms on the first story have the ceilings arched, this author makes a difference, and with sufficient reason; for these he allows the height in a square room to be one third more than the breadth.

We see the antients, in square rooms allowed a greater height; and something is to be said in favour of each practice. Their rooms were more magnificent; and these directed by *Palladio* would be more light; we have instances of both proportions very exactly preserved abroad, some in houses built by *Palladio*, and others in such as are of an earlier date. It is not easy to determine which, upon the whole, is the better, because there are palpable advantages in each; the wisest method would be to endeavour at a proportion between the two, which should avoid the disadvantages of both, for both have these as well as advantages. Such a middle proportion might have a sufficient addition of dignity in imitation of the antient rooms, and be light enough to the top, though not so light as those of *Palladio's* proportion: but whoever shall set about this

this reformation, both of the antique and this eminent master, must remember that it is in *England* he builds, and not in *Italy*. The same space will not be so well enlightened here, by the same apertures, as there, where the sky is clearer and the sun more bright. Therefore in establishing what we express by a proportion between the two, he is not to take the exact middle number, but certainly something less than half the difference is to be added to *Palladio's* height. This is taking a mean measure in effect, though not in feet and inches; because it is allowing for the difference of the *Italian* and *English* light.

If this were all, the point were easily determined; but much more is necessary. Between half and a third of the breadth added in the height, there may be innumerable proportions, the measure being minutely divided; of all these some one is indisputably better than any other, but which that is none yet have fairly try'd: and it is a point nothing but trial can determine.

As experience here must be the certain director, all we can do is to advise the young architect into the right tract for making his experience useful. Let him, on the first opportunity his employment offers of making an arched ceiling, determine the height of the room as we have directed, by allowing something less than a medium between the one and a half, and one and a third the breadth.

When he sees the effect this has, let him, in the next room he builds of the same kind, vary on one side or the other; and so on in every instance; keeping an exact register of the proportions of each.

We shall, in another place, give certain proportions for windows: these he must, in all rooms carefully observe, and then, every thing else being equal, he will be able to judge which of the rooms succeeds best upon the whole. Such a determination, founded on such critical experience, would be a rule of certainty for himself; and the publication of it would be a publick benefit.

In those rooms with arched cielings, whose length is greater than their breadth, this author directs a new height to be found, by adding the length and breadth, and dividing that measure in half. If a room, on this proportion, were twelve foot long, six broad, and had an arched cieling, the height of it must be nine foot; that being the half of the joint measure of the length and breadth, which put together are eighteen foot.

This is a very plain and familiar direction; but it is farther from exact truth and perfection than the other. Its error is on the side of excess, not defect; and we advise the architect to endeavour establishing a proper height by repeating his variations, in making rooms of this proportion less and less, by small degrees in height, than according to the rules of *Palladio*.

Book III. This author's proportions are brought to a fair trial in *England*, as we have before observed, because they are calculated for a freer, clearer, and brighter air; and, upon all these occasions, more height may be allowed to a room of equal dimensions, and with an equal number of windows, here than there.

This author adds another rule, but more difficult, and less accurate, by which he determines, that in a room nine foot long, and only four wide, the height will be determined at six foot. But this is not only worse proportioned, but the rule will not always be capable of being executed, as himself observes, by numbers.

In the succeeding part of this work, we shall reduce the rule we have laid down as best, to practice in various rooms; and the architect will then see that all he can learn from precept is but of limited use; that a great deal is left to fancy, and that there can be no law of height established, which shall generally and universally answer all the variety of dimensions and occasions.

What he should establish from his own experience we have shewn him. By the result of such a practice, he will be enabled to proceed in general; and, in rooms of the more usual dimensions, when he has ascertained himself in this respect, he will be in a condition to vary, on needful occasions, according to his fancy.

This is very frequently necessary, but it is never done well, unless by him who is first a master of all the settled proportions.

C H A P. XXVIII.

Of GALLERIES.

WE will suppose our architect about to undertake an edifice where every part is to come in, that we may not have him deficient in any article under this head. A very good house may be finished without a gallery, because it is an apartment that serves only for particular occasions, and that is of elegance rather than necessity; but when it happens that the person who requires a house to be built desires to have a gallery, it must not appear a new thing to the architect. These several parts of the young builder's business should all come into his study together; when he is making himself master of his science, it is then he should examine all its particulars. When we have gone through this general account of the structure of rooms, we shall come to their decorations, and we would not have him then turn back to consider the past article of their dimensions.

The same course should be kept by the mind in any study, as is followed in a regular work; one is to be the plan and rule for the other: and of this he may be assured, who proposes regularly to make himself master of a science, that there is no way to arrive at that end, but by perfectly going through every part as it rises.

We therefore lead him in this place, after the proportions of common rooms, to the structure of the gallery. This, as it is only a part of great houses, and intended for the most elegant purposes, requires to be finished in every part with the strictest care; for there is no room in which a fault will be so soon shewn, or so harshly censured.

The essential distinction of a gallery is, that it be longer than the usual proportion of rooms; and its great use is for the reception of pictures. Sometimes they are made studies, and sometimes kept for walking in. Some use them as eating-rooms, but they are less fitted for this purpose than almost any other form.

The first question, with respect to galleries, is, whether the proprietor desire to have one or two? For on this depends their place in the edifice. The rule is universal, that if only one be required, it must be in the centre of the house, either in the fore or back front; but this makes the gallery occupy a principal part of the edifice, so that it is better there should be two, in which case one is to be placed in each of the wings.

We see people trespassing upon this rule very frequently, and that in elegant buildings. Those who do not care to part with the centre of the house for their gallery, and yet want only one, order a single one to be carried out for that purpose; but, in this case, there should be at least the external part of another to correspond with it.

It is essential to a gallery to have a free and open and obvious communication with the rest of the house. It is a room intended for grandeur, and there should be a hand-
N°. XXXI. 4 Q some

Book III. some opening to it. We have told the architect already, how erroneous a practice it is to have any difficulty about the door of a house, or any blocking up before the principal stair-case; and the same caution is to hold good against the obscuring the way to the gallery: it should be open, spacious, and properly disposed: there should be preparation for the entering such a room; and a stranger should not pop into it as into a parlour.

The gallery at *Versailles* is liable to this objection, and should stand as a caution to all builders; you drop into it one way in a strange unexpected manner, without the least preparation; and the other way you are to cross a court, and find a blinded stair-case, which opens directly, and without any preparation, into the great apartments; and, after passing many of these, you come to the salon, which is the true entrance to the gallery.

We name these errors in great buildings, because the young student, if they were not pointed out to him as such, might take them for examples, and suppose the conduct proper. It is not the common practice to distinguish between great and fine; the vulgar eye supposes every thing that is rich must be elegant.

As to the size of the gallery, that must be adapted to the extent and bigness of the whole building; for this, we have shewn, is a first article of propriety: and no part can be admired that is not of a piece with the whole.

As to the proportions of length and breadth, the architect is at liberty to vary them according to the occasion, and to the paintings they are to receive, for there is nothing so much left to discretion: in general, from fifteen to two and twenty foot, is the measure of breadth for a gallery; and according as it is required to be longer, or intended to be shorter, some measure between these, nearer the largest or smallest breadth, is to be taken. Its length may be from four to eight times its breadth, and its height equal to, or more than the breadth. The finishing of these rooms we shall shew with that of the others.

C H A P. XXIX.

Of HALLS, LOBBIES, and PASSAGES.

WE are coming toward the end of our present part : the distribution and general division of the house is made in the mind of the architect; but he is to remember there will require certain places of common reception and communication.

The hall answers this purpose below, and that he has provided for; above stairs, there must be the same conveniences, and these are to be lobbies and passages. In a great house all is to be great, and these are to be of the same character; and in a smaller house they must have their due and adjusted proportion: as there is nothing handsome that has not proportion, there can be nothing perfect in the plainer way that has not commodiousness; and all the careful disposition imaginable of apartments will never give a house this character of commodiousness, if there be not proper passages; and places of reception, and intercourse to, from, among, and between them.

With respect to the place of common reception, and entrance below, which is usually a passage in small houses, and a hall in larger, we have observed already that it may be made a hall in all houses with great propriety.

In more magnificent houses it should always be made as large as the rule of proportion to the entire building, and to the other rooms, will allow. We have shewn the error of swallowing up the rest of the rooms in this; but when its dimensions are within the bounds of proportion, its large size is an article of great advantage.

In town a hall is a place of reception for servants; therefore, in this, neither magnitude nor elegance are needful: in the country, where there are other ways into the house, the hall may be an elegant room, and it is there we propose its being made large and noble.

It serves as a summer-room for dining; it is an anti-chamber in which people of business, or of the second rank, wait and amuse themselves; and it is a good apartment for the reception of large companies at publick feasts.

A good hall has many other uses, amongst which, the representing of theatrical pieces, while that instructive diversion was in fashion, was one.

These are reasons for the spaciousness of a hall; but then, if the rule of general proportion be not observed, the bigness of this room may make all those look little into which we pass afterwards.

It

Book III. It is a fashion in some places to give halls the form almost of galleries; to make them very long in front, and very shallow: this answers the purpose of giving room behind, but it is an ill way of getting it. Halls of any consequence are seldom thought of unless for large houses in the country; and there it will be easy to take in a few feet more of ground, and not to make the hall a slip in order to give depth to the parlours.

The proportion of breadth to length should be very considerable in a hall. *Palladio* says that it may be made twice as long as broad, but never should exceed that length. This is indeed carrying the length of a hall to the full proportion; and that author adds, with great justice, that the nearer they approach to square the better. From what we have observed upon a variety of instances, it seems that from one and a third to one and a half the breadth, is the proper and most proportional length of a hall.

The best height for a hall is somewhat less than its breadth; but here we are to consider the difference of flat and arched ceilings, as in other rooms. In those halls which have coved ceilings the height may be within a twelfth part the measure of the breadth; but in those with the ceiling flat, four fifths of the breadth is a very good general proportion: however in this the architect has a great deal of latitude for the saving room above; for the hall may be lower than either of these allowed proportions, and yet not liable to great censure.

The whole that relates to lobbies, and entrances from room to room, and among the rooms above stairs, is that they be made as spacious as proportion requires, without hurting the shape or dimension of the rooms; and that they have due light; these are points never to be attained unless the construction of these places of intercourse be projected at the same time with the rooms, and there be the design of them kept in mind while the rest is under consideration. The student may be assured that he will never execute that design well which he contrives by piece-meal. All must be planned together, and every part regulated upon a just idea of the whole.

From the hall below, and from the lobby above, if the construction of the whole take in such a lobby, the doors to the several apartments are to open some on the right and some on the left; and let the young architect set it down as an universal rule, that these are to open directly opposite to, or strait over against one another.

This is an article of regularity, but the consideration extends farther. There is a proper symmetry in the apartments on one side of a house, answering to those on the other; and this disposition places the walls in such a manner, that they equally bear the weight of the roof.

One good consequence as regularly attends on another, as one ill. When the apartments in a house are well proportioned to one another, their walls bear their several regular and just shares of their weight; but when larger rooms are made on one side of a house, and small ones on the other, and their disposition is varied as well

as their dimensions, one side of the house will be stronger, and another side weaker, Chap. 29.
and the consequence of this will be in time the ruin of the whole edifice.

The saloon is another room of state and grandeur that has a place in magnificent houses; we have, in the first chapter of our first book, given the nature and general proportions of this part of an edifice, and shall not repeat it here; what farther is needful for the student, in respect of this, will be distinctly shewn in our succeeding plans; and explained in the references to the plates.

We have thus led our young architect from the door of his intended house, thro' his hall, up his stair-case, and through his lobbies, into every apartment.

We have before spoke, in the amplest manner, of the roof, and may suppose him a master of that part of his subject; he will therefore understand now in what manner to delineate the plan and elevation of the house on paper, for his own satisfaction and improvement; and to transfer it from the paper to a model; there perfectly and familiarly to explain the design and meaning of every part to the proprietor, to hear his objections; and to answer them with modesty and candour, or to undertake such alterations as he requires.

We shall here take some notice of the manner of building among the antients of different periods, from whence various happy thoughts may arise to the architect of genius; and having thus delivered him his general rules, and laid before him the proper sources of improvement in the science, we shall lead him to the construction and finishing of the house he has now planned and modelled, and to which he may add some improvements from the succeeding hints.

Of the ÆGYPTIAN manner of building.

WE look up to the *Greeks* as the fathers of science, but we are to remember in this enquiry, that there were an earlier people with whom those *Greeks* had intercourse; whom they honoured as the most wise and learned of all nations, and from whom they confess that they received the origin of their several improvements. These were the *Ægyptians*; the *Greeks* found architecture among them, tho' they were the people who reduced it to a science: the orders, which are the ornament and glory of the art, are all of *Greek* invention, but without this knowledge of a peculiar form and proportion in their columns, the *Ægyptians* arrived at great magnificence in their edifices. Therefore, although we are to look no farther than *Greece* for the invention of regular columns, yet we may find it worth while to seek in *Ægypt* the first rudiments of magnificent building; at least the first at this time known.

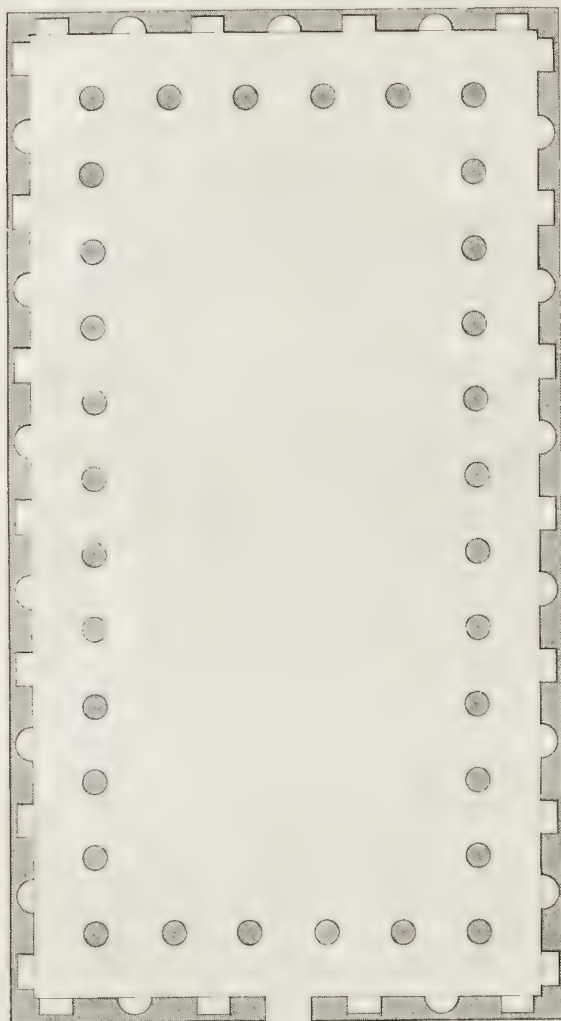
The whole manner of building among these people we are not to expect we can know at this time; many have presumed to treat of it, but from imagination, not knowledge; these therefore we reject from all consideration, but we have accounts of one magnificent kind of edifice upon better authority; this was their *banqueting house*. The *Greek* historians have spoke of the splendour and dignity of this kind of building; and *Vitruvius* has left us an account of its structure and proportions in so correct a manner, that what we so much admire the ingenious architect may reduce to practice. *Palladio* has delivered in lines what we read in *Vitruvius* only in words, and he appears to have understood the *Roman* better than all his commentators. It must be allowed that *Palladio* in his draught has introduced some things which *Vitruvius* does not mention, nor the *Ægyptians* could know; in particular the regular *Corinthian* order: but with this and a few other reasonable allowances, he seems to have given us the sense of *Vitruvius*, and to have conveyed the magnificence of the *Ægyptian* architecture in a very happy manner.

This author calls the building an *Ægyptian* hall; and others have treated of it after him under the same name, and have try'd to execute it in various places, though not very happily.

As it is a structure so extremely noble, and most have failed who have undertaken it, we have added a plate representing a design of one of these *banqueting-rooms*, formed with more strictness than *Palladio's* upon the *Ægyptian* plan; and which, we hope, from the general account we are here about to give of it, and the explanation of the several parts, annexed to the plate, will be rendered so intelligible, that any architect of tolerable capacity may undertake to build it with regularity and beauty.

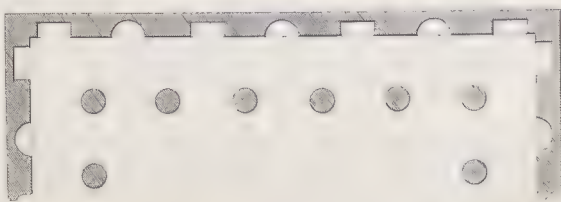
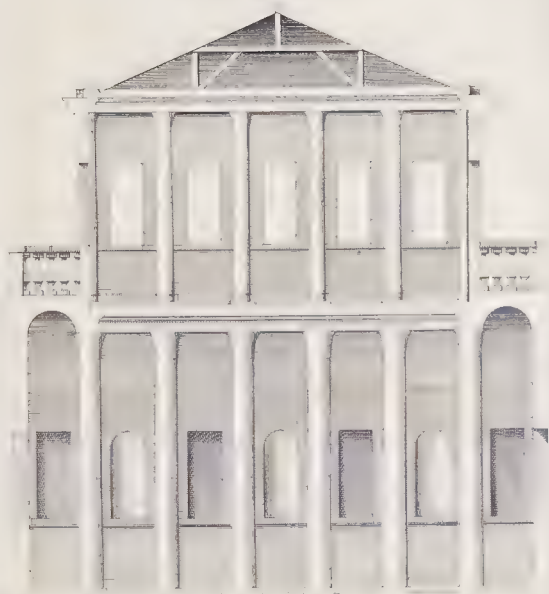
The *banqueting-room* of the *Ægyptians*, was, in its usual size, from a hundred to a hundred and fifty foot in length, and in breadth somewhat more than half its length. We

Plan of an ancient Egyptian Banqueting Room



An Antient Ægyptian Banqueting Room
before the Invention of the Orders.

Pl 37





will suppose, upon a medium, a hundred and twenty-five feet for its length, and for its breadth seventy feet. Upon this area they built the room in the following manner. Chap. 39.

At the upper end, and along the two sides, they placed rows of pillars, not *Corinthian* columns, because they knew them not; but tall and tolerably proportioned pillars, agreeing in their measures with one another, though of no regular order; and at the lower part they made a magnificent and spacious entrance: this seems to have taken up with its ornaments one end of the building entire. We are not told there were any pillars there, though perhaps they placed two or more toward the angles on each side for uniformity, the central space being enough for entrance in the most august manner.

These rows of columns were set at a distance from the wall, forming a noble portico round two sides, and the upper end of the building.

Upon these pillars was laid an architrave, and from this was carried up a continued wall with three quarter columns, answering directly to those below, and in proportion one fourth smaller in all their parts. Between these three quarter columns were placed the windows which enlightened the building.

In this article of laying only an architrave over the lower columns, we are strict to the *Egyptian* manner. *Palladio*, who, as we have observed, uses some liberties in his design of this kind of structure, adds a freeze and cornice over the architrave, making it a complete entablature. This, like the *Corinthian* order, is not *Egyptian*, but it is a very elegant addition. We distinguish it because we are speaking distinctly of the *Egyptian* building, which has in itself sufficient magnificence, nor needs the addition of the *Greecian* orders.

From the tops of the lower pillars to the wall was laid a floor; this covered the portico over-head within, and made on the outside a platform which was surrounded by a corridor with rails and balusters. This was terrac'd, and serv'd as a place for people to walk upon, and from this they could look through the windows down into the room.

Most who commented on *Vitruvius* suppose he meant that this platform or terrace should be covered; but they certainly err: *Palladio* is almost the only one who leaves it open; and he is certainly right. Any covering to this terrace must have darkened the building by obstructing part of the light to the windows: the company on the outside were not to be considered at the expence of those within, nor indeed did they require any shelter for them, for the *Egyptians* were in no fear of rain.

Palladio makes the upper row of pillars to be only half their diameter out of the wall; but as there will be light enough in his way of leaving the terrace uncovered, three quarter columns may be very well allowed, and they will give an air of dignity and freedom to the whole. As the under row of columns are perfectly insulate and free, the nearer this upper row approach to the same condition, the more propriety there will be in the building; and we have laid it down before as a general maxim, that when
columns

Book III. columns must be in part engaged in a wall, as they are to be in this instance, the more of them stands free the better.

We have shewn how this kind of room may be constructed upon the true *Ægyptian* plan, and it will have prodigious magnificence: this we perfectly recommend, because there should be in all these things a strict truth and propriety. Those who chuse to introduce foreign ornaments may do it in *Palladio's* manner; but, with the regular orders, it is a composed room, and not *Ægyptian*.

Most who have treated of this kind of room allow it less breadth than the proportion here allotted; but there is foundation in reason for this proportion: the columns standing within, at a considerable distance from the wall, by the natural effect of light and shadow, take off from the seeming breadth; and in structures of this kind, where there is no absolute rule of proportion, the architect may always consider the apparent as well as real shape; and consult optical as well as geometrical rules. Sir *Henry Wootton* gave the hint for this, and it is perfectly right and proper.

The room being thus proportioned should have a magnificent gate of entrance; and this, according to our strict ideas of propriety, should not be enriched with any of the orders of architecture, because they were all unknown to the *Ægyptians*, to whom we owe the invention of the structure, and whose memory, as the inventors, we should perpetuate and reverence.

The room will have a natural air of regularity and beauty from the just proportion of length and breadth observed in it; and it will have an aspect of vast magnificence and dignity from the columns thus placed, and from its great height, the soffit reaching above the cornice of the upper series of columns.

The *Ægyptians* decorated these edifices with statues, and nothing can be better than to follow their example, for no kind of room can shew them more happily; but in this case, as in all the others, the architect of true taste will place there *Ægyptian* figures, that the whole may answer, not to its name, for that is a poor conceit, but to the original design, invention, and manner of the building.

No light will fall so happily on statues as this which will come from above, in so regular, proportioned, and uninterrupted a manner.

We are the more particular upon this subject of an *Ægyptian* banquetting-room, because it is not only in itself a structure that does honour to architecture, but it is a kind of building we want. It would be a very august and noble room for a coronation feast, or any other of the great solemnities.

In the erecting such a building here, the architect must, as on all other occasions, take into consideration the difference of the climate, and make proper allowances; though in *Ægypt* or in *Italy* a marble pavement might answer the purpose, it would not be proper here.

Such

Such a room in *England* should have a boarded floor, and it should be carpeted for the reception of the guests; and with us five magnificent chimney-pieces, two in each side, and one at the upper end, would add greatly to the convenience, and not impair the beauty. This is the method of accommodating the designs of the warmer and brighter countries to our own: and, without these many of the noblest plans and models must be useless.

C H A P. XXXI.

Of the houses of the antient GREEKS.

HAVING traced architecture to *Aegypt*, and drawn from its original source a structure of great dignity, we may pursue it to the habitations of the early *Greeks*, and see their manner of reducing the science to use.

Vitruvius has, with great care and correctness, collected and delivered to us all that can be certainly known on this head, and his faithful follower *Palladio* has very happily reduced many of his precepts to practice.

The doctrines of the one, and the application made of them by the other of these great names, we would have our architect perfectly know; but we would not have him rest his pursuit of knowledge there. *Vitruvius* was judicious, and *Palladio* accurate in the highest degree in these things; but let him remember that both of them, with all this praise, were no more than men: they may have erred, and this he should examine; or they may have stopped where the thought might have been pursued farther, agreeably and usefully. This is the work of genius and attention; let him that has the one thus employ the other, and both with perfect freedom; reverencing these as men of the first rank, but still considering them as men, upon whose already established fund of knowledge it is not impossible but he may advance something farther useful and new.

To assist him in this, we shall treat the following subjects, as we have done the last, with perfect candour, and we hope with useful freedom.

In the account of the *Greek* architecture in private houses, we find great conveniences, and in that of the *Romans* of the same species a great deal of magnificence. In this perhaps the chaster taste of the *Greeks* is not without its deserved applause. They were very well acquainted with the use of lofty porticos, and spacious entrances, but these they used in what might be called their sacred architecture only: they appropriated them to the temples of their gods.

Book III. The entrance to their private houses, however large and spacious they were, was always small, narrow, and plain.

The whole edifice usually consisted of two courts, and several ranges of building, in which every thing was disposed with great convenience and regularity.

Their *porter's lodge*, if the phrase may be applied to such early time, was always placed on one side of this narrow entrance, and it was usually on the right hand; it being to that side people, except left-handed, usually turn.

Opposite to this were placed the stables; by which position their horses were always near the air for their health and exercise, at a distance from the principal apartments, to which their smell might have been offensive, and in readiness for use.

From this first entrance one came into the first or smaller court; this had piazzas on three sides, and on the fourth, which was usually the south side, there were buttments of pilasters, which supported the parts of the ceiling more inward.

A space being thus left between the one and the other, they had places for the lodgings of men and maid servants; and such as had the principal care of the house.

Upon the same floor with these buttments, they had several regular apartments, consisting of an anti-chamber, a chamber, and closets; and about the piazzas rooms for eating, and for all the common purposes.

Opposite to the entrance was a lobby, or vestibule, through which lay the passage into the several rooms; and through this, in front, one entered a large passage, which led into the larger or principal square.

Round this they had four piazzas, which, in the common way of building, were all of equal height; but in more magnificent houses, they made that which faced the great entrance loftier, and every way nobler, than the other three.

A nobleman of *Rhodes* added this to the common magnificence of their buildings; and it was thence called the *Rhodian* manner.

In this more noble part of the building were the apartments of the family. These were adorned with lofty galleries, and here were the best rooms; they were called the mens apartments, for in rude times these *Greeks* lodged their wives and female relations in the best rooms of the first court, where they had also their separate and detached place.

The two sides of this larger court were kept for the reception of visitors; and servants had their appointment to attend upon them.

This was a noble species of hospitality; the master of the house entertained his guests the first day in his own apartments, but, after this, how long soever they stay'd, they lived without restraint in one of these separate piazzas, and joined the family only when they chose it. Thus was the upper end and the two sides of the great court disposed of, and its lower end, being the same range of building that was the upper end of the first court, held the lady of the house, and her female friends.

This was the antient *Greek* way of building the private houses of persons of distinction; and there is a great deal to be said in its favour. There was retirement and great convenience; there was magnificence within, but plain decency without; and this manner of building, though it covered a great deal of ground, yet was not very expensive, for they raised their several parts to no great height. The light fell in very well in this way of building, and there was a cleanly and chearful aspect in the whole.

C H A P. XXXII.

Of the private houses of the antient ROMANS.

WE have seen architecture travel from *Ægypt* into *Greece*, with great improvement in the article of convenience; and we shall now follow it from the later days of the *Greeks* to the *Romans*, where we shall see much pomp and magnificence introduced in the private buildings.

It is from *Vitruvius* we are to gather what we can know in this matter, as well as the former; but it is singular that this author, though a *Roman*, is not so distinct, clear, and intelligible on this head, speaking of the buildings of his own country, as in the description of those of the *Greeks*. However, enough may be gathered from him to form a general idea of their manner.

The *Romans* usually placed the principal front of their house to the south, and on this they bestowed all the decoration of expensive ornament; they had here lofty galleries and spacious rooms, and every thing carried an air of greatness and of shew.

In their country-houses they preserved the same situation, and the same front, but the inner distribution was different.

At the entrance they placed the meaner and more offensive offices, after the manner of the *Greeks*. The first gallery which received the stranger at his entrance had on one side a passage to the kitchen, and on the other to the stalls where they kept cattle, that their noise or smell might not be perceived within, while they were yet in readiness for all services.

These stalls were placed to the left of the passage, as the stables in the *Greek* houses, and the kitchen to the right, which had its light from above, and its chimney in the middle.

The

Book III. The account given by *Vitruvius*, we have observed, is not very clear in this matter ; and hence have arisen great disputes among architects who have undertaken to lay down the design of a *Roman* country-house. Some place the kitchen in the back of the building ; while *Palladio* and others give it this place in the front part.

Scamozzi, who is much displeased with *Palladio's* design, takes this method ; but though there are other authorities, as *Pliny* and *Columella*, whom these follow, *Vitruvius* is certainly, in a matter relating to architecture, the most to be depended upon ; and it becomes us to say, in justice to *Palladio*, that whether he have or have not in all points perfectly understood that author, and accurately represented his meaning, yet, in this matter of the kitchen he certainly is more conformable to his words, than those who place it far behind.

Farther within the building were placed on one side bathing-rooms, and on the other family conveniences, in the manner of our butteries and store-rooms ; the bathing-rooms were on the left, and these others on the right.

Backwards, and full to the north, they placed their cellars, for fear of the sun ; and over these were other store-rooms.

From this part of the structure one came into the court, for in these there generally was only one court ; this was taken up by servants, and those who had the care of cattle, and on each side there were off stalls for them. In front from the entrance, but very far back from all this annoyance, stood the nobler apartments for the master of the family.

Thus we see the *Romans* in their country-houses followed very nearly the *Greek* model, though in those in towns they used a very different method. In the one the magnificence was in the most remote inward part, and in the other it was displayed before the door.

SECTION II.

Of the CONSTRUCTION of HOUSES

IN WHICH

The Orders of ARCHITECTURE are not employed.

C H A P. I.

Of common houses in London.

WE have thus shewn our student in architecture what are the essential, what the ornamental parts of a building; and how he is to employ and introduce them. We have instructed him to delineate his plan, and fabricate his model, and have laid before him, in a succession of examples, the several parts of a structure subservient to convenience, or designed for decoration. He sees what was the practice of *Aegypt*, *Greece*, and *Rome*; and having thus all before him that may contribute to form his mind for the perfecting of every part of an edifice of any kind, we shall shew him the disposition and particularities of a house, from the smallest to the most magnificent and noble.

Nothing must be esteemed below the consideration of a complete architect, nor is any thing above him; he must be ready to make the best design for the service of the proprietor, whether it be of the meanest cottage, or the most magnificent palace. This is a course of study he must follow, otherwise he will never know all the conveniences and advantages of the different dispositions of rooms, nor the method of profiting from that material variety. It is with reason we have asserted the best architect is not to be above designing the smallest edifice, for nothing is more certain than that he will acquire more reputation from a well-constructed cottage, than from a faulty palace.

The common houses in *London* are all built in one way, and that so familiar that it will need little instruction, nor deserve much illustration. The general custom is to make two rooms and a light closet on a floor, and if there be any little opening behind, to pave it.

Some attempt to make flower-gardens of these little spots, but this is very idle; plants require a purer air than animals, and however we breathe in *London*, they cannot live where there is so much smog and confinement; nor will even gravel continue clean many days from the turning.

Book III. In this respect therefore, instead of borders under the walls, the best method is to lay the whole with a good found stone pavement, and at the farther part to build the needful edifice, that cannot in *London* be removed farther off; and something of similar shape and little service opposite to it. An alcove with a seat is a common contrivance in the space between, but it is a strange place to fit in for pleasure: all this therefore is better omitted; and the young architect is to have a general caution on this head, that will serve him on many more, which is, that when there cannot be any proper ornament, nothing is so becoming as perfect plainness.

The lower story in these common houses in *London* is sunk entirely under ground, for which reason it is damp, unwholesome, and uncomfortable; but the excuse has weight: ground-rent is so dear in *London* that every method is to be used to make the most of the ground plan; but even in the most ordinary houses in the country, where some of the offices may be made without doors, it will always be best, instead of these totally under-ground floors, to have a basement story.

The front room below in *London* is naturally the kitchen; the vaults run under the street with an area between, in which is to be a cistern, or other vessel for holding water, and there may be behind other vaults beyond another area.

In common houses the fore-parlour is the best room upon the ground-floor: the passage cuts off a good deal from this, and from the back parlour; this usually running strait into the opening, or garden as it is called, behind; but it is a much better practice to make the back parlour the better room. This may be done as we have proposed by making the fore room a hall or retaining it in form of a parlour; the passage into the garden may be from below, and consequently the breadth of the passage there taken in, which gives the back parlour a greater extent, and another window.

The first floor in these common houses consists of the dining-room, over the hall or parlour; a bed-chamber over the back parlour, and a closet over its closet.

This closet is usually a corner added to the building, and continued to the second story, not to the garrets.

In houses something better than the common kind, the back room upon the first floor should be a drawing-room, or dressing-room, for the lady; for it is better not to have any bed on this floor.

The two rooms on the second floor are for bed-rooms, and the closets being carried up thus far, there may be a third bed there.

Over these are the garrets, which may be divided into a larger number than the floors below, for the reception of beds for servants.

With all the care that can be taken in this article, often the number of servants cannot be lodged there; and in this case a bed for one man, or two maid-servants is contrived

trived to let down in the kitchen. But in this case the necessary care of those peoples Chap. I. healths requires it should be boarded.

This is the common construction of a small *London* house, for the reception of a family of two or three people, with three or four servants.

We have given already the proportions in general of rooms to one another; and nothing will be more familiar, or more proper, than for the young student to begin with a plan and a model of such a house; the subject being perfectly easy, and every part of it familiar in his mind.

From what we have before said on these heads, he will be enabled, without much difficulty, to make some improvements; and having the whole in his eye at once, he will perceive where advantages can be given and taken, and how to make the most of every portion of room for the reception of some kind of thing or other that must have its place.

Conveniencies of all kinds are no where so much wanted as in *London* houses, nor is there any where so little room for them: it is therefore a very proper thing to consider how to add to them.

This is the most trivial and most familiar manner of building; but it is the most universal. There may be many improvements made, and many things discovered in it, and there is no part of the science from which a common builder will draw so much advantage, or by attending to which he will so much recommend himself in the eye of the middle rank of people.

Such a house as we have here been speaking of is to be built for six or seven hundred pounds, or it will cost upwards, according to a little more extent of ground, and a little more than usual ornament. The common builders of them work jointly, one doing his share of business in the other's house, according to their several subordinate professions; so that it is not easy for them to say what they cost, but they are generally ready to sell them for fourteen years purchase, exclusive of ground-rent.

As this is the way of bargaining for *London* houses, a great deal depends upon the terms on which they are first let. This the owner is therefore carefully to consider, for it absolutely fixes the price of the house.

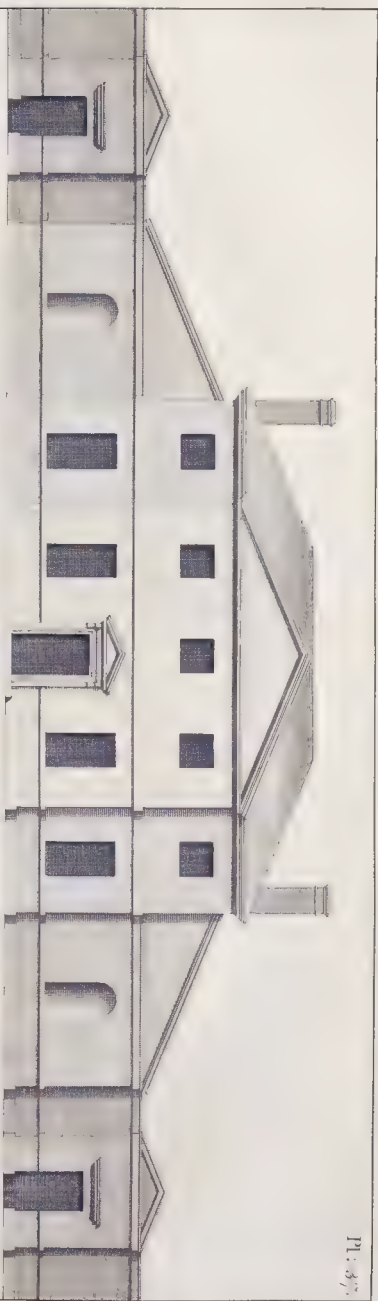
C H A P. II.

Of common houses in the country.

WHEN nothing more is intended than a habitation proportioned to the family, the common house in the country is built just as the common house in *London* for the most part; though here there is room for great improvement at a small expence, because of the quantity of ground. This we shall shew, and in general a great deal more is required. Most who reside in the country meddle, in some degree, in rural matters, and they are to be considered as a sort of farmers; in constructing of their houses therefore, when any thing more is meant than just a place to sleep and eat in, something of the construction of a farm-house and its offices is to be introduced into the plan of the building.

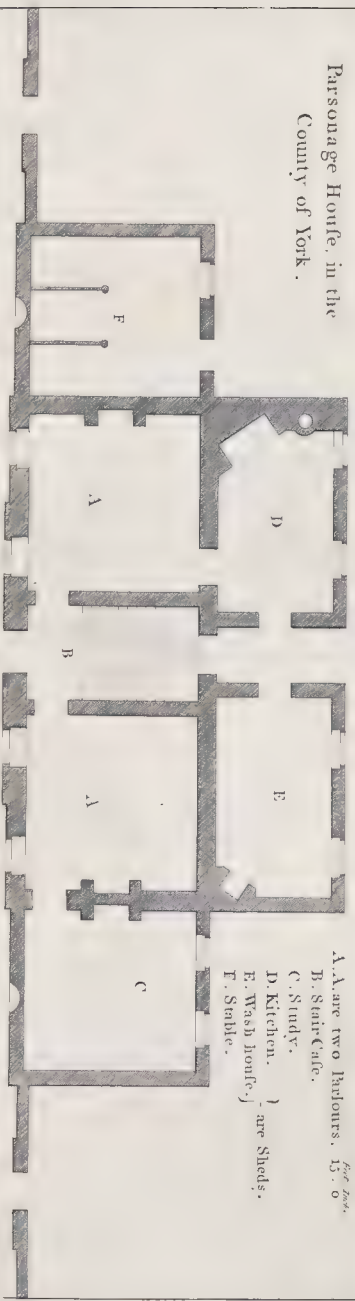
A house where nothing of this is required, and which is for the reception of a small family, may be built without any under-ground work at all. Upon the level of the ground, if it be a dry wholesome soil, may be an entrance from the principal door; and on each side of it a parlour. In front may be the stair-case; and over these lodging-rooms. Behind may be placed a kitchen and wash-house, which need be no more than sheds well covered; and, as most who devote themselves to a country life take the amusements of reading and of riding, beyond the right hand parlour may be a study, covered as the kitchen, and beyond the left a stable. The passage into the study being from the parlour, and the opening into the stable by a door outwards.

This will be a house of some convenience, and of small expence; and of this nature is that we have figured, as a parsonage house in *Yorkshire*; a small family may find perfect convenience in such a building.



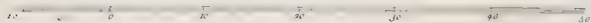
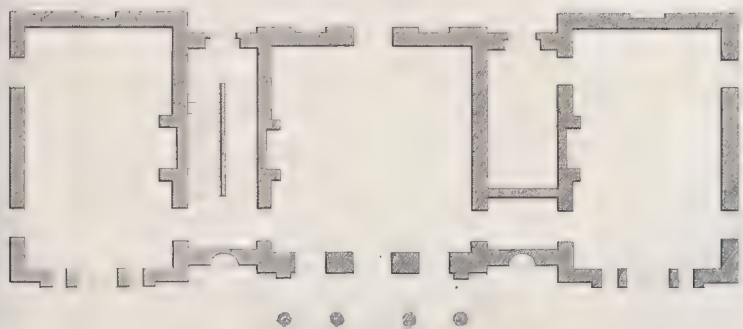
Pl. 37.

Parsonage House, in the
County of York.

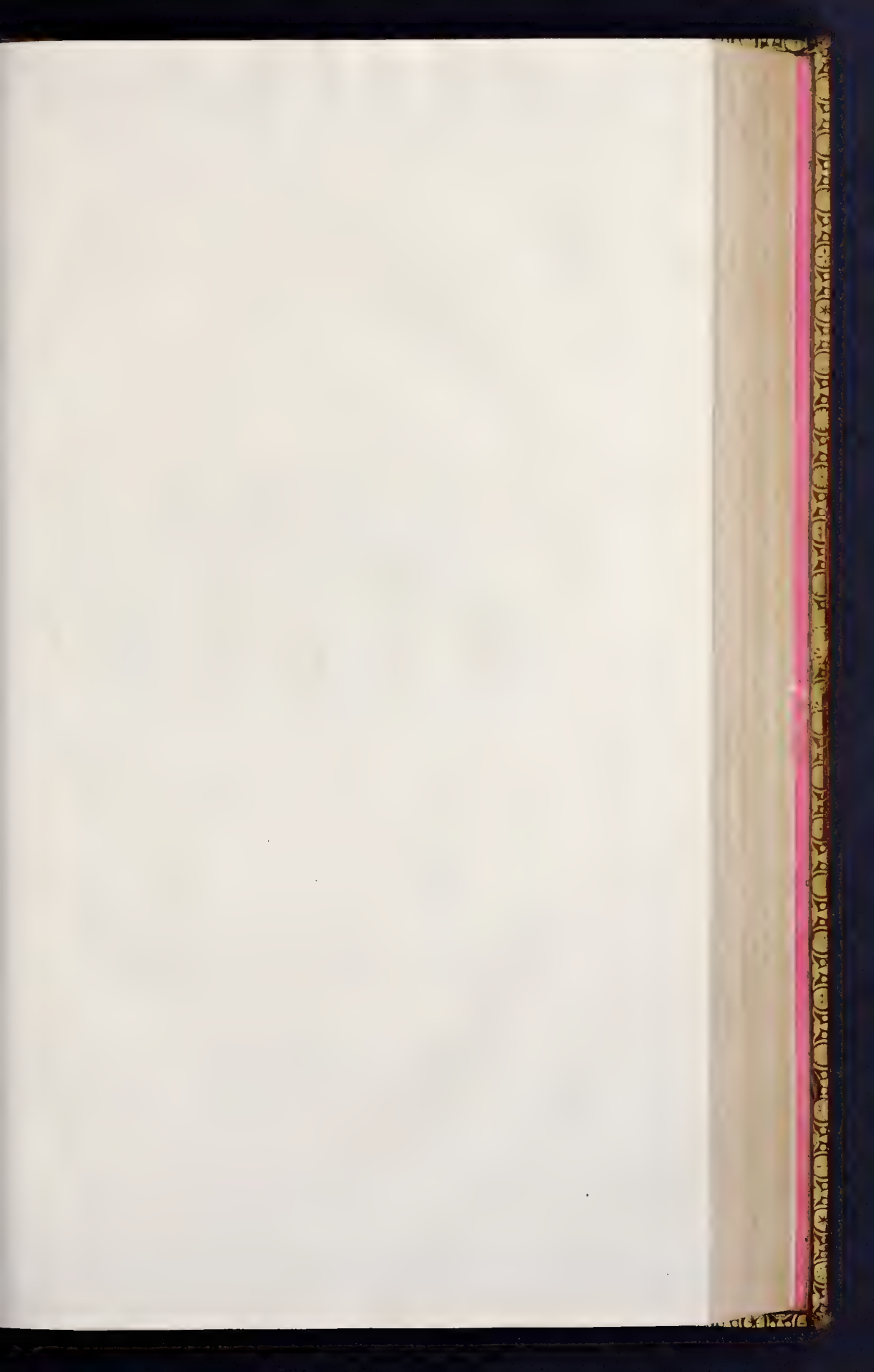


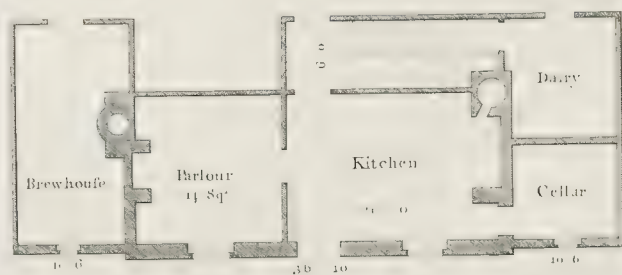
- A. A. are two Parlours, 15. 0
B. State Cafe.
C. Study.
D. Kitchen.
E. Wash house.
F. Stable.











0 10 20 30 40 50 60 Feet

Small Farm near Bagleswade, at Calcut.

C H A P. III.

Of the construction of small farm houses in the country.

WHEN we take in the article of farming in ever so small a way, we must add extent.

To this purpose the whole must consist of the house and out-buildings, with a needful quantity of ground, according to the size of the house, and the compass of the intended business.

Beside the house for the family, there must be a barn for the reception of the produce of the ground, a stable for cattle, and a cart-house for keeping the utensils under cover, and sheds for lesser purposes. The construction of the house is to be quite different from those in town, or such as we have mentioned in the last chapter for the country; for here no dining-room is required, and in the small concern we propose to begin with in this place, a better kind of kitchen may very well answer the purpose of a parlour.

Let a piece of ground be taken of five times the extent of the front of the house, and enclosed in the least expensive manner.

Back in the centre of this, let the house be placed, and in the front of the ground the barn, and the stable, with the adjoining sheds: these are to be set one on each side, to the extreme measure of the enclosed ground: they will thus fill up a part of the entrance, and will leave all about the house some enclosed ground by way of yard,

From the barn to the stable may be extended a fence with a gate in the middle.

This gate should front the door of the house; and thus the ground will be very well disposed.

Thus much being settled, the plan of the house and out-buildings may be made in this manner.

The door may open into a plain brick passage, at the end of which may be carried up a small stair-case. On one side of the passage may be a common kitchen, and on the other side of it the better or larger kitchen, which will serve the farmer and his family by way of parlour.

Beyond these may stand on one side the pantry, and on the other the dairy-room; the last being of twice the size of the former; and being on the same side with the best kitchen: the heat of the other not being so proper near it.

Book III. To these may be added more rooms on the ground-floor as needful; and the upper story is to be divided into bed-chambers for the family, with garrets over them for the servants.

Behind this should be a small garden for use, not shew; and thus the house is finished.

It remains to consider what to do with the ground for the two principal out-buildings: these should be erected of the same size for uniformity, though their inner division may differ. The barn must be an entire and undivided edifice; but the other may be very well divided into stable and cart-house.

Behind the barn may be the hog-stye; and behind the stable a calf-house; both sheds: and, if there be occasion, open sheds may be placed against the house.

This is a very plain and familiar structure and disposition, suited to a little family that engage in some small farm.

Under the two kitchens there may be arched cellars.

The walls of the cellars should, for such a house as this, be two bricks and a half thick up to the springing of the arch.

The arch itself should be one brick; and the other parts of the house two bricks to the surface of the ground, and one brick and half from thence to the roof; the gable ends one brick.

The walls of the barn and stable should be built as those of the house: and the walls of the hog-stye and calf-house only one brick. This is a sufficient strength, and comes very cheap.

2

OF ARCHITECTURE.

C H A P. IV.

The construction of a somewhat larger farm house.

FOR the construction of a larger house, the first concern is to fix upon a piece of ground somewhat more extensive; and in all these cases the choice is to be made according to the situation of the farm, and nature of the ground. Health and convenience are the two articles that here come under our regard; for the first the spot must be dry, and for the other the more central it is the better: and other respects being equal, the nearer the road the greater the advantages.

The plan may be so made that as this house is to be somewhat larger, it may appear much more considerable to the eye. The barn may now be a detached building in the middle of the yard: and the stable and cart-house, answered by the cow-house and calf-house, separated from the principal building only by a gate on each side, may stand as two wings; which, with a very little decoration from a judicious builder, will have a very pretty effect.

In this case the plan may very conveniently be disposed thus.

Let the principal door open into a moderately wide passage, with stairs to the upper rooms: on the right of this passage let there be the common kitchen for the family, and on the left a room somewhat larger, which, in very small farm houses, it is usual to call the best kitchen, but here it may be called the parlour; the place where the farmer, his wife, and children sit retired from their servants when they chuse to do so.

Adjoining to one of these may be the cellar, and to the other the dairy: a couple of closets may be placed through the cellar for various purposes, and behind the milk room may be the pantry.

This takes up the body of the house on the ground-floor.

Nothing need be raised over the dairy or cellar, for there will be upper rooms enough in carrying two stories over the parlour, kitchen, and passage.

The two wings we have named may be joined to the body of the house by a couple of gates; one may be the stable, and the other the cow-house: and conveniently enough a hog-stye may be made behind the stable, and behind the cow-house a calf-house.

This is also a very plain and familiar construction. Here will be as many rooms as are wanted by a moderate family, and, if constructed without elegance, they will lie very conveniently for use.

In

Book III.

In this manner the young architect will very easily see how to enlarge or contract his plan for the building of farm houses, according to the intended bigness.

They all consist of the same number of rooms, and in general of the same number of offices: this is where the bare article of convenience for farming is concerned. When the inhabitant is grown rich, and intends to live in another manner, he may add what he pleases; which the architect may adopt out of the directions for the buildings before-mentioned. It is then no longer to be considered as a farm house, but as the house of a person of some fortune, who intends to live as those independent of business do, but without to have some farming in his eye.

In this case, which is the situation and choice of many country gentlemen at present, and probably will be of more, for it is rational and agreeable in the highest degree, the best instructions will be taken from the *villas* of the ancient *Romans*.

The great men of that famous nation, when they retired into the country, always farmed. Their servants of various denominations took care of their affairs in this respect; and they had always one who performed the duty of farmer to the full extent.

We have shewn in what manner they placed their houses, with the whole apparatus of a farm before them; and something in the same manner may be very happily and elegantly executed at this time.

Many of their houses in the country, according to the most accurate accounts we have of them, were too near their farm yards, and too much upon a level with them, so that they were in the way of dirt, damp, and offensive smells, but that is not needful in the construction of such a building.

If a proper spot were chosen, it is not easy to conceive any thing more agreeable than such a construction might be made. We will suppose the advantage of the ground so taken that the house should stand on the brow of a small hill: from this there should be a gradual descent to a brook, whence the ground rose on the other side again, though to a less height. The farm might be situated just on the other side the brook; a fine lawn might lead down to the water, and a bridge over that lead directly into the farm yard.

The cattle would thus have the advantage of water, the family would also have it in abundance for all their occasions, and the whole disposition of the farm would seem as a picture, viewed from the house. The cattle sprinkled upon the hilly pastures would afford a prospect vastly beyond that of deer in a barren park; and the successive labours of the farm, the hay-making and harvest-work, while they were all performed in this manner, under the master's eye, would give an everlasting variety.

Of the distribution of the parts in a country house with a farm.

WE are now considering the house of a man of fortune, who shall chuse to add to it a farm for the advantage of having every thing about him; and for the pleasure of enjoying the country in its full beauty: for this is certain, that none but the farmer knows the full extent of that satisfaction which poets have so finely described, and which every one affects to admire.

We have placed the house of the servant, who in this case acts as farmer, full in the master's eye, yet at such a distance that it cannot annoy him with any ill smell, or other disagreeable accident.

Round about this house of the manager of the farm must be buildings for sheltering and feeding the cattle within doors, and others for preserving the fruits of the ground. These are the stables and barns belonging to the common farmer's house, and they are there built in a careless and slovenly manner, because meant only for use; here beauty must be considered: some more expence will be allowed for the erecting of them, and the business of the architect will be to design them.

As he places the house of the farmer in full view of the principal building, he should dispose, and construct all these its additional parts upon the same principle of having a pleasing effect from thence.

He is to consider all this as a picture, and as he knows where the eye is to be placed, he may very happily and agreeably throw the whole into perspective.

The house of the farmer is to be the principal object, and this must be placed on the highest part of the ground: from this, on either side, the out-buildings are to descend spreading in form of wings, toward the brook at the bottom; which terminates the farm territory. These will serve to enclose the proper quantity of ground for the yard, and the very racks and stalls may be so placed in that, with a view to the eye at the proprietor's house, that they shall form a picture.

Under the direction of a skilful architect, the barns, stables, and cow-houses, will rise like so many pavillions; and the very sheds will assist in the design.

In this manner every part will join; and nothing will obstruct the intention of mixing perfect utility with great elegance.

As the principal building must in this case be proportioned to the dignity of the proprietor, and the number of his retinue; so must the out-houses in particular, and the whole construction of the farm in general, be calculated according to the natural produce of the quantity of ground to be occupied.

Book III.

This is an article of which the architect will not be able to judge; therefore let him not be above receiving information concerning it. No man need be ashamed of ignorance in a business which he does not follow, and this is more in the way of the meanest farmer, than of the most judicious builder that ever lived.

The quantity of produce will be proportioned to the extent of land occupied by the possessor; let the builder enquire of the neighbouring farmers what it will naturally yield, and when he has learned from them what bigness his barns and other repositories should be, let him follow his own design in the placing them.

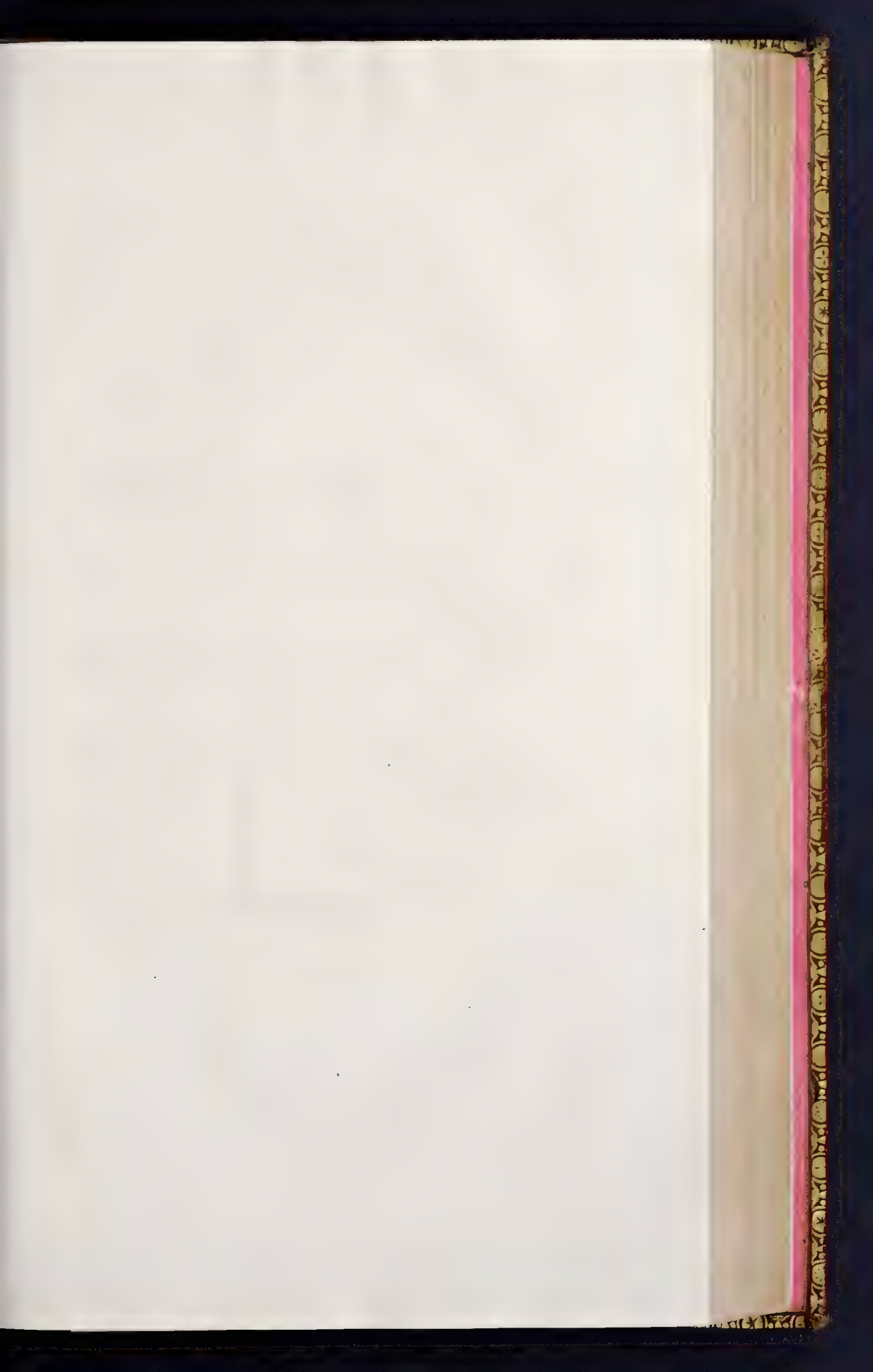
The communication between one part and another may be under piazzas of a cheap structure, and the same form may be given to several parts of the out-buildings, which require only a back and top: thus expence will be saved by the very construction that gives beauty and elegance to the whole.

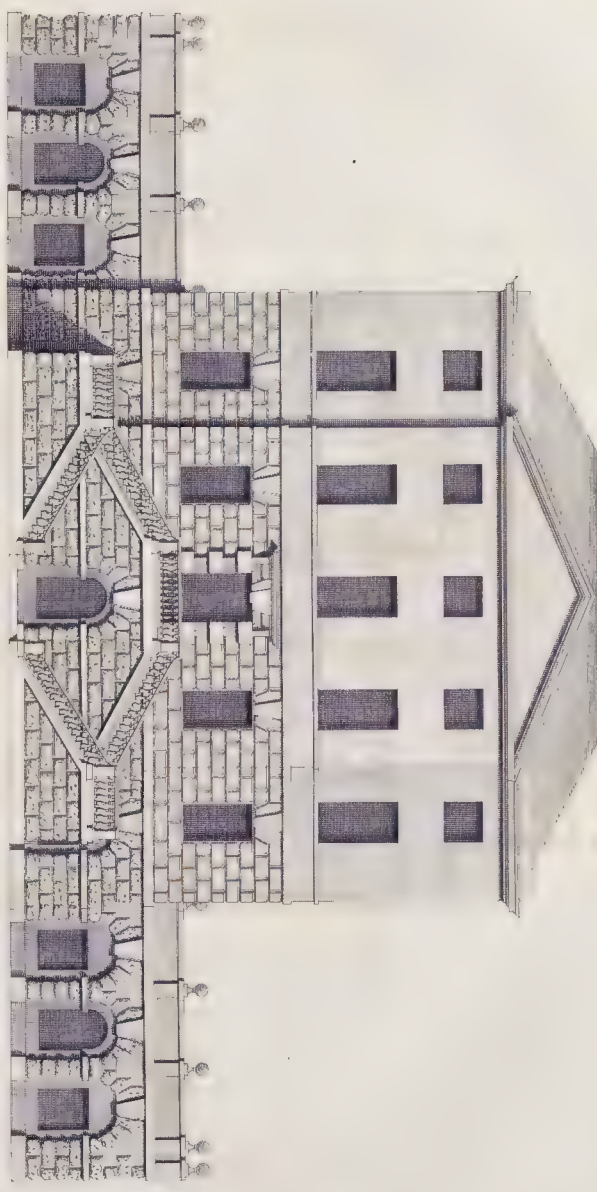
There must be in such a piece of building lodging-rooms for several servants of the meaner kind; and these may be much better provided in the out-parts, than in the house.

If some be lodged over the hen-houses, that common thievery of hen-roost robbing will be avoided; and a great deal of mischief of a like kind will be prevented by the same careful disposition in other respects.

With regard to the better kinds of cattle, their houses and stables must be placed on the higher ground, that they may have a warm, dry, and airy place. Hogs will do well toward the lower part, and the cribs and stalls for feeding the cattle may conveniently be placed near the bottom, the water being near, into which there should be made a proper descent with a sound bottom for the creatures to enter to drink.

Thus the construction of a gentleman's farm may be finished, and the satisfaction as well as advantage attending such a building would be so great, that if the fashion were once properly set on foot, numbers would follow it. Perhaps there is not in the whole extent of the builder's profession, any part so worthy his consideration as this, in point of profit. The mixture of farm and garden is become very much admired, and would be more and more if it were carried to this height; and he who should set the example, by planning out an elegant and pleasant habitation of this kind, would recommend himself by that first structure to many of those which should be undertaken in its imitation. This would certainly happen, because those who undertook another would know no person could be so fit to conduct it, as he who did the first.





10 20 30 40 50 60 Feet

PLATE

W. H. R. 1844



SECTION III.

Of the CONSTRUCTION of HOUSES

IN WHICH

The Orders of ARCHITECTURE are used.

C H A P. I.

Of the proper distribution of the orders.

HAVING led the young architect from the plainest houses to some others in which genius may display itself in the elegance as well as propriety of the construction, we now advance to those of a higher kind, in which he may introduce the whole dignity of the science. Here knowledge must come to the assistance of his fancy; for the doctrine of the orders is a point of very essential and established science; but this is a knowledge which we hope we have conveyed to him in the preceeding part of our work, treating of this portion of the architect's study.

With this knowledge of the intent, use, and character, of the several orders of columns, he will find it no difficulty to dispose them properly in more magnificent structures; and we have shewn the method of designing his plan: he is therefore to join these two parts of the study together, and he will make no errors in the choice, or disposition.

He is to remember that the heavier and more massy orders are always used in the lowest places when more than one order is employed; but that is rarely the case. They must be very magnificent buildings indeed wherein there are several series of columns.

In general, one series is a great addition of dignity; and then the choice falls between them all, but in general the *Ionic* or *Corinthian* are preferred.

The choice between these is to be made, not, as is usually done, according to the expence, but according to the other decorations of the building: for the more they are in number, and the more elegant in their workmanship, the more the *Corinthian* order will become them, and the plainer they are the more proper will be the *Ionic*.

This is the middle order, and it is in general the best, where only one row of columns is used. It is sufficiently light and elegant, and there are few edifices which are so decorated as not to become this better than the other.

When

Book III. When the *Ionic* order is used alone, the place for it is on the principal floor, and nothing is so proper as to support it on a rustick basement story.

When two orders are used there can be no better choice made than of the *Doric* and *Ionic* for less ornamented, and the *Ionic* and *Corinthian* for more rich and decorated edifices.

When the latter choice is made, the *Ionic* may be placed on a continued course, on a level with the ground floor; and the *Corinthian* upon pedestals raised on the entablature of the *Ionic*.

This practice is justified by Palladio's ^{first} second plate, in his second volume, of a house at Udine; but though we produce this instance to give a sanction for the placing the *Ionic*, or whatever other lower order, upon a plain course, and the *Corinthian* or upper order upon pedestals, the architect is not to suppose the edifice there represented is to stand as a model in all respects, for it is liable to many objections. That part of the front in which the columns are placed is too narrow for its height.

There are two stories within each order, which is very much against the strict propriety of architecture; though other instances may be produced for it in good buildings.

To this we shall add that the *Corinthian* columns would have looked lighter if they had been fluted.

The true spirit of architecture is against the fluting of columns in general; but, in this case, where an order is raised to an upper story, and supported on pedestals, there is an air of elegance and delicacy in the fluting the *Corinthian* shaft.

The ground-floor wall of the fore front of this house is rustick, and even this is not altogether commendable; the rustick of a lower story is most proper when that story is not of any great consequence, but here there are properly two. The upper one is indeed but a metzanine, but still the continuing the rustick to this height, as it is in front of a good story, and behind *Ionic* columns, is a practice which, although it may be justified upon this authority, yet is not to be recommended as an example.

The candid reader will not blame us that we thus speak with freedom of the works of the greatest masters. We have done it with regard to the remains of the antique, and it has been received without disgust; that liberty which could be allowed in regard to those great remains on which all that is noble in the science is founded, we hope, will not be condemned with respect to a more modern author, whose great praise is that he formed himself upon them. It is thus we apprehend the works of great masters, and the writings of the best authors, are to be rendered serviceable to the student. Howsoever great those persons have been they were not without error; and their works will be of double service when the excellencies are thus distinguished from the defects. Without such caution every thing seen in the antique, and every thing read in Palladio, would naturally be received by the student as a model, and a law. He would by this

be

be led sometimes out of his way, and think he was copying excellencies when he was imitating imperfections. Chap. 2.

For this reason, as we have, in the preceeding part of this work, shewn him what was excellent and what defective in the celebrated remains of old time, we shall, in the succeeding pages, while we support our instructions on instances in the practice of the great architects of later ages, be free to name what in the same structures appears amiss: we shall always do this with candour, and it will remain with every reader on his own deliberation to adopt or reject these our particular opinions. The intent of this undertaking is to make the utmost advantage of whatever has been done well in the science. So far as we are able to execute a design so useful this will be done throughout the work; and it appears that in no part a free disclosing of our sentiments can be more useful than in this.

C H A P. II.

Of disposing the DORIC under the IONIC order.

WE need not say here, that where a double series of columns are intended, and these orders are fixed upon, the *Doric* is to be the lower: it is a principle sufficiently established already, that the most massy always must have the lowest place; but there is a great deal of variety in the manner wherein the columns may be disposed; and, from the several instances we shall produce on different occasions, innumerable other forms of disposition may be drawn.

We have, in the second volume of *Palladio*, a beautiful design wherein the *Doric*, or lower order, forms a portico that takes up the whole fore front of the edifice. The columns have no pedestals, but are raised five foot above the level of the ground by a thick wall; the offices are under this, and the best floors are thus raised out of the reach of damp, and made more airy. In the centre of the edifice above is a hall, which projecting a little, is supported by double columns at the outer angles: this is an uncommon and a very beautiful method of disposition; but if ever it should be copied in *England*, there must be more light admitted than in that design.

Some, when they use the *Doric* and *Ionic* order in the same building, give each its pedestal; and others place both upon their bases, without any farther elevation or support.

In this last case the design is better than in the other; for the *Doric*, in a lower story, upon a pedestal, is an ill sight. Solidity and firmness are the character and intent of that order, and a pedestal breaks in upon that appearance.

The better method is to place the *Doric* plain on its base, and to give the *Ionic* a pedestal. In general pedestals are better omitted than employed, but if they be any where allowable, it is in the support of columns upon a second story. There is not required so

Book III. much strength there as on other occasions, and generally the form of the edifice demands a pedestal by way of uniformity.

We see pedestals used to columns in the antique in some instances; and if in any case they come in properly they do here.

The lighter the building the more reason there is for raising the upper order on its pedestal, because that always gives it an air of lightness; and, in the same manner, the more ornamented the building is, the more proper is the column to be supported on its pedestal, because that always gives an air of greater decoration, though it take away the appearance of strength.

For the same reason the fluting of an upper row of columns is proper. This, like the pedestal, is against strict rule; but the columns in this place have less to support them than when they stand under the finer orders. In treating of the *Ionic*, we have shewn the student that different bases may be used; and, as the builder has his choice in this article, he is not to hold it as a matter of indifference. Reason and propriety are to be considered in all things, and there is here one plain course to follow, which is to suit the base to the use of the order.

The *Doric* also affords him his choice of different bases, as we have shewn; and in the same manner he is to select from these that which is suited to the disposition of the order in the building. We shall begin with the base he is to select for the *Doric*, because that is the order for the lower story; and we shall here lay down one general rule which may give him the reason of our choice in the present instance, and direct him in all others on these occasions. This is, that the more solid bases are to be used when columns rest immediately upon the floor, and the lighter and more elegant when they are placed on pedestals: the reason of this is plain; all lightness is an impairing of strength, now the columns that rest upon the floor are those fittest for bearing weights, therefore they should have the most solid bases: when they are raised on pedestals beauty is more consulted, and less strength is required, therefore the finer and lighter bases will answer the purpose, and they are more adapted to that part of the design, being always the more beautiful.

To bring this to the present occasion. We have, in treating of the *Doric*, given three bases; two proper to the order, and one common to it and the others. This latter is that called the *Attic* base: it is in the architect's choice to give this to a column of any order; though, on proper occasions, it suits none so well as the *Doric*.

Of the other two, the one is supported by antiquity, and the other is the invention of a late architect, *Vignola*. For the figures of these we refer the reader to *Plate XIX*.

The antique *Doric* base, which may also be called the *Roman* base of the *Doric*, is seen in the remains of the *Coliseum*, and is the strongest of them all, the out-line spreading from the base of the column to the plinth very gradually. The next in strength to this is the base of *Vignola*: it is not so strong as the *Roman*, because of the sudden

sudden encrease in breadth of the torus, but it is handsomer; the most beautiful and Chap. 3.
least massy of them all, is the *Attic* adopted by *Palladio*, and used by most others.

Whenever the *Doric* is set upon a pedestal the *Attic* base is the most proper; but it is not limited to that use alone, for it is solid and strong enough to bear very well upon the ground.

Now of these three let the architect chuse according to the size of his column, and the weight of the building; it must be very large and massy indeed to require the *Roman* base: *Vignola's* will have strength enough for almost any edifice; and, in general, for these purposes, the *Attic* will be of sufficient strength, and then it is always preferable. This is the custom most adopted, and *Palladio* has followed it in the before-named design.

We suppose then the *Doric* columns placed upon the pavement with the *Attic* base, and their entablature raised upon them.

C H A P. III.

Of the manner of placing the IONIC over the DORIC order.

THE *Ionic* is to come over the *Doric*; and the question is in what form it shall be constructed.

In the first place we are to consider that raising it upon the entablature of the first row of columns is very proper.

This also directs the propriety of the pedestal for each column of the upper order; the *Ionic* columns are to come between the windows, and there would be an apparent irregularity in the structure, if they rose from their bases on the entablature of the *Doric* without any support; beside that in reviewing the building from below a great part of the base would be out of sight, and consequently the column not seen in its entire state; that being a very beautiful part of it.

This therefore is a case in which reason directs the use of the pedestal.

For each column therefore let there be a proper *Ionic* pedestal, for this is the most elegant way of working, and upon these place the columns in their most beautiful and light manner.

The pedestal being fixed, the base comes next under consideration.

The *Attic* base is frequently used for this order, and it is a very common practice to raise it upon that when it is a second series, though the *Doric* have the same below; but this is not so proper, it gives a look of sameness which is displeasing to a nice observer.

BOOK III. The *Ionic* has a proper base of its own. We have named this with some censure because of its weakness, but it is ornamented and elegant; here therefore is the proper place of it. We do not require strength in the *Ionic* of a second series, therefore let its own base be used; it keeps the whole more distinct than the other method, and it has an air of lightness.

For the same reason, let the column be fluted in its shaft; this corresponds with the base; and thus we shall have an entire order, regular in all its parts, of sufficient strength to support the weight that is laid upon it in this way of using it, and altogether distinguished from the lower. In one there will be an aspect of strength and solidity; and this will be improved by the contrast of the light delicacy given to this other. The strength of the lower order will be natural and proper, because it will appear to have a good deal to support; and the lightness of the upper series will be very well reconciled to the eye, because we see it has little to load it.

Indeed the upper rows of columns in common buildings are considered as ornaments rather than supports. We look upon them as shapes of columns rather than as the things themselves, in their natural and important office; and it is therefore we, on these occasions, allow of their having all those decorations, which in the reserved and severe taste of propriety, we on other occasions declare to be false.

In the building of *Palladio's* which we have mentioned on this occasion, the *Doric* columns form a kind of portico; and there is no way of using them so judicious or so beautiful. As we wish to see the column entire, so we wish to see it quite free and insulate. We never can judge of a column unless we see it under these two conditions, entire in all its parts, and standing clear of all other objects; it is thus we see its proportions and ornaments in their true elegance, and it is for this reason the way of placing these in the manner of the portico has so happy an effect: it gives the whole building an air of freedom and dignity.

In other circumstances they must be set out as much as the nature of the design will admit; the architect always keeping this in his mind, that the more free they stand, the more beauty they will have.

When columns in the lower story are let into the wall, it never should be more than a fourth part of their diameter, and even this gives a tameness and confined air to the whole; very much inferior to the noble freedom the same order gives when used as we have directed.

It is a common practice in the upper series to use pilasters instead of columns; or, when there are columns in the sides, to have pilasters in the fore-front of all, where it is made to project a little.

Custom and great names support this practice, but reason declares against it.

A pilaster has always a flat and poor look; but it no where shews itself so much disadvantage as when it is seen above a column. The eye is naturally carried from one to the other, and the contrast sets the pilaster in a very disagreeable light.

Nothing can have a more beautiful aspect than an *Ionic* column of a smaller module, rising with all its ornaments perpendicularly over the *Doric*: but when we see a pilaster over the column, it is poor to the last degree. The entire *Ionic* over the entire *Doric* is the way of placing them with most elegance: but there may be something spared of this; and a column engaged in part in the wall is always vastly preferable to the best pilaster. Chap. 4.

The judicious never see a pilaster in any building, but their imagination recalls at the same time the idea of a column, and shews the poorness of using this harsh piece in its place; but when the columns and pilasters rise over one another in the same place, and shew themselves to equal view together, the most vulgar eye sees the difference, and always with disgust and displeasure.

C H A P. IV.

Of the manner of using the IONIC and CORINTHIAN orders in a building.

THE same general rule comes into use here as before, that the *Ionic* being the more massy order of these two, is to be placed lowest. It was the upper ornament in the preceeding instance, because the other was the *Doric*, heavier than it; and, for the same cause, it takes the lowest place when these two are used together, the *Corinthian* being lighter.

The edifice in which these two orders are employed is naturally to be more magnificent and more decorated; and there is no way in which they appear so beautiful, as when an *Attic* is raised over the *Corinthian*, and the pilasters of that little order support statues. This is shewing the use of the *Ionic* and *Corinthian* orders in an edifice in their most elegant light. The wall of the lower story may be wrought with a light rustick behind the *Ionic* columns, and the windows between the *Corinthian* of the first floor should be decorated: the *Attic* pilasters then rising over the entablature, and supporting the images, all is of a piece, and every thing has its use.

It is common to see columns in the front of a building that are put there only to shew themselves; the architect thinks he has done enough if he have proportioned them justly, and placed them properly, but this is absurd and unnatural: let our student, who is to form himself upon the principles of reason, guard utterly against it. Columns are very ornamental supports, but still they are intended as supports; and to place them without something over them, is to depart from the rules of nature and propriety.

An *Attic* very happily finishes a column of one of the great orders; but what is the *Attic* placed there to do? Still unless something be set upon that, it is only encreasing the absurdity. It is placing support upon support where there is nothing to be supported.

Book III.

ported. Our builders have so far a notion of this, that they speak continually of the finishing of an order, but custom, rather than any idea of what is right, seems to have established this principle in them; for when they have put a small *Attic* upon the head of a column, they think they have done all that was required under the name of finishing; not recollecting, or not knowing, that the *Attic* makes as poor and naked a figure without its statue, as the column would have done without the *Attic*; and that there still wants the great article propriety, without which nothing can ever please a reasonable mind.

What we would inculcate by this strict lesson, is that, when two elegant orders and an *Attic* are employed, there should always be the expence of something to crown the *Attic*. Let the architect who is to undertake so large a work finish his plan to this taste, and then propose it to the proprietor; if the addition of statues, which probably was not thought of, should be objected to, the best method is to alter the design. The *Attic* order should in this case, by all means, be retrenched; and then, as the columns will have no other office but to support their entablature, it will be better to alter the plan so far as to change the intended orders; the less ornamented ones will do better, and the plan will be reduced to the former of a *Doric* and *Ionic* front, instead of an *Ionic* and *Corinthian*.

It is certain that the *Corinthian* order in the front of a building, expresses so much elegance that it should be united with elegant ornaments of all kinds; the design we have made of terminating by an *Attic* crowned with statues, is the least that should be allowed to it; and we will suppose it therefore to be carried on in that manner.

We now enter upon the disposition and structure of the columns, and in this respect all that has been delivered in the last chapter comes into use with equal force. Reason always inculcates the same truths, and these lead one to another.

The same propriety which directed the *Ionic* order, when it made the upper series, to be supported on its pedestal, and decorated with all its ornaments, now retrenches them all; for the purpose is quite altered, another order has taken the place where there is little to be supported, and nothing to injure it, and the *Ionic* now is to be constructed plain upon the same principle of reason that directed the *Doric* to be made so before.

In that case we directed the *Ionic* shaft to be fluted, the base to be its own, which is light and weak, and a pedestal to be set under it; in this the flutings are not to be allowed, because they either weaken, or appear to weaken it; the base is to be altered because strength is required; and for the same reason it is to be without a pedestal, because it will so stand firmest; beside these elegant and sharp parts which stood secure upon an upper story, here would be exposed to continual injuries; the corners of the pedestal, the sharp mouldings of the base, and the edges of the listels between the flutings, would be shattered by every little accident. Therefore they would not be able to retain their beauty, nor would they have propriety.

C H A P. V.

Of the construction of the IONIC on a lower story.

UPON these principles we direct our architect, when his *Ionic* is the lower order, to use the *Attic* base; to place it upon the pavement, or on a low wall, and to make the shaft plain.

Thus will there be an air of strength, and of more dignity than in the lighter way of executing it.

What we have said of the *Doric* holds good of any order that makes the lowest series. If the columns be perfectly detached, it is best of all, if otherwise, the less they are immersed in the wall the better.

It is not only in the base of the *Ionic* that the architect has a choice of variety, there are two kinds of capital to this order, and of these he is to take which best suits his design. The antient is very plain, and has a beautiful simplicity; the modern is more decorated: this naturally directs his choice. If the edifice be very full of decoration the modern capital will join best with the rest of the fabric; but if otherwise, his happiest choice will be the antique, which will give a fine opposition to the other order.

Indeed, though the modern capital be most used, the antient is in this case generally to be preferred.

When the *Ionic* is an upper series, the modern capital is best, because it more agrees with those ornaments we have directed to be employed on the rest of the order in that case; but where the *Ionic* is the lower series the plain old capital is generally preferable. It has more appearance of strength, and is in less danger of accidents.

There is also a farther reason why the antique capital should be used in the *Ionic* of a lower order, when the *Corinthian* is raised above it; which is, that the volutes in the modern *Ionic* much more resemble the scrolls of the *Corinthian* capital than those of the old; therefore the old capital is preferable, as we have observed that the distinction is as much as possible to be kept up between the two orders used one over another in the same building.

Having thus settled the place and manner of the *Ionic* in a lower story, we are to consider the most elegant manner of working for the *Corinthian* that rises above it. As no plainness can be too great for the *Ionic* below, no decoration can be too much for the *Corinthian* above.

There

Book III.

There is the same reason for placing this order upon a pedestal in the present case, that there was for raising the *Ionic* in the same manner in the other design; but though this be very proper it is not essential, for we see, by very elegant instances, that the *Corinthian* in an upper story may stand on a base without its pedestal. We would have the architect who studies by our plan, know at the same time what may be done, and what is best to be done; for there are circumstances under which he cannot always chuse what he knows is in general the best method.

When the *Corinthian* column in the upper series is raised upon its pedestal, let the builder take care that the pedestal be that which is peculiar to the order, and that it be well executed in all its parts.

In this case, a continued balustrade of the height of the pedestal is very proper to be carried along over the entablature of the *Ionic*, and under the windows; this should be proportioned to the proper height of the *Corinthian* pedestal for a column of that model, and the windows should commence where it terminates. Then the column raised upon this pedestal will stand altogether free, exalted, and in full view from below, and it should be wrought with the utmost care and elegance, and have every advantage of decoration that belongs to the order.

Where the other design is preferred, and the design is to place the *Corinthian* order upon its base without a pedestal, another method should be followed.

If the columns be placed directly upon the entablature of the lower order, as is the practice of some, the disadvantage of not seeing them entire from the ground, named in the other instance, occurs here; and it is the more disagreeable, because this, being an order of more expence, it is fit it should be seen entire.

Therefore, in this case, the balustrade should be low and interrupted, not continued, as in the former instance; and the columns should rise against the naked of the wall, with a free space on each side of them. This will serve to shew their shaft in the lower part free, and by means of the windows, the diminution of the column will be very beautifully shewn.

To give the whole column to the view from below, the best method is this: let a course of stone, which may be called a continued socle, be carried all along over the entablature of the *Ionic* columns; on this let a little balustrade be raised for the support of each window, terminated by low pilasters, and made just of the breadth of the window.

These being erected, there will remain between the windows a plain space for the columns.

The plinth of the base is to be laid upon the course of stone, and the column then raised in all its just proportion.

This

This will give the column very fully to the eye; and the course or socle, though Chap. 5.
no ornament to the edifice, will not be seen. It will be buried in the perspective
view, though shewn in a geometrical plan; and the columns will seem to rise free.

We have observed that the columns should have all their ornaments. They should
be fluted, and have their diminution carefully made.

In fluted columns it is common to cable up a part, but it should not be done here,
for the use of that addition is to prevent the edges being injured by accidents, where-
as here, as we have observed in the preceeding instance, the order is not in the way
of any.

The diminution of a column, we have observ'd, may be either from the base, or from
one third of the height only. We have shewn the builder before that he has this
choice; it is now we are to direct him in the making advantage of it. The beginning
the diminution of a column from one third of its height may in some instances be
more graceful, but the beginning from the base is always the most natural; and in this
case strict propriety and grace agree. It is by much the best method, in all cases
where the eye is to be placed below, to begin the diminution from the bottom, other-
wise the sight is troubled, and the regular form of the shaft never can be seen.

As we have declared against the common practice of beginning the diminution
from a third, we are here to reject utterly the fashion of giving the shaft a swelling.
This is in itself a false practice on all occasions: it never will please a person of true
judgment; but in this case where the eye is so placed below the object, it utterly per-
verts the intent of shewing a diminution. If this be not gradual and exact it is no-
thing; and it thus appears altogether irregular.

In declaring what will be the sentiments of a person of true taste in these respects,
we must be understood always to mean one whose taste is founded on the rules deli-
vered by architects, but finished by a true and just idea of the subject. He who is li-
mited in his opinion by what others have said, can never arrive at that character: he
may have knowledge, or it may be called judgment, but taste is something more de-
licate, and is to be added to knowledge; and it is this alone which can be allowed to
judge impartially, and to determine freely, concerning the practice of this elegant and
noble science.

Book III.

C H A P. VI.

Of the choice of parts for the CORINTHIAN order in a second story.

THE base may be varied in the *Corinthian* as in the other orders, and this is to be appropriated therefore to the occasion. We shall remind the architect also that he is not ty'd down to one certain rule in the construction of the capital. He is sufficiently sensible that the capital of this order, as in all the others, consists of certain essential parts which must always be preserved; that none of these must be omitted, nor any thing added to them: yet he will find there is a great deal of variation within the compass of antique example for the putting these several parts together, and for their different proportions. He will remember that we have shewn him, in a preceding part of this work, the great liberties taken in this matter by the antient architects; it was for this purpose we named them, that he might on these occasions refer to them. He will find that he needs not on every occasion refer himself coldly to *Palladio*: he may make great variations in his capitals, and by that means adapt the order to the edifice in a happier manner than that person ever will be able to do who shall confine himself to the measures of any one author.

The remains of antique buildings shew a vast variety of alterations in the capital of the *Corinthian* order: eight of the principal of these we have given in *Plate XXIII.* to which we refer the student; and shall recommend it to him, on this occasion, to finish up his capital after the model of any one of them which shall suit the place in the structure he is erecting.

If he chuse to follow any one of these, his answer is ready against all possible censure. If he enlarge the flower in the abacus, and alter otherwise, according to the same draught, the measures of the capital, when any accuse him of departing from the measures of *Palladio*, he may refer to those who built the temple of *Vesta* at *Tivoli*; and if he prefer keeping the corners of the abacus sharp, and make it terminate in four, instead of eight points, he may silence all cavil by referring to the temple to the same deity at *Rome*.

What the antients did in their most celebrated works, the modern architect may certainly imitate, and introduce into his; and his judgment should be seen in appropriating to his edifice what he has thus the spirit to adopt from the antique.

With respect to a base, as the *Corinthian* has one of its own, that should be used preferably to all others when the order is thus elevated.

It is liable to objection when the order is placed lowest, because it has neither strength to support weight, nor solidity to resist injuries, like the *Attick*; but being

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removed in this case from the necessity of one, and the danger of the other, its own proper base should be used, because it characterises the column, and is so well ornamented that it suits the design. Chap. 6.

We have observed that the front into which the *Corinthian* order is introduced, should be ornamented in other parts: this and the weight above must determine the architect what capital of the antique to chuse for his model.

With respect to the weight above, the capital must be appropriated to it, by chusing the lightest where there is least, and the most massy where there is most. It was thus the antients acted; and this was the cause of those variations which we advise the modern builder, on the same principles to follow.

He will find, among these antique remains, some that are higher, some that are lower; the higher are the slighter, and therefore are to be preferred where there is least to be supported, or but to appear so; for in these cases the eye must be satisfied as well as the judgment. On the other hand, when there is a great deal above, the capitals should be chosen from those which are the most massy among the remains of the antique.

It is not that there is so much between one and the other of these in real difference, as in appearance to the eye, but appearances are, in these cases, greatly to be consulted.

Of the choice of CORINTHIAN capitals.

UPON the same principles, and in the same manner, the degree of work in the capital is to be suited to the richness of the other ornaments of the building. The leaves are the great character of the *Corinthian* capital, and these are more or less cut, or as the builders term it, ruffled in different remains of the antique. Those wrought with the true acanthus leaf are the simplest of all, and in true taste the best; these therefore are best suited to a front but moderately ornamented for one in which there is an order of this kind; and in general it may be added here that as these leaves in the capital are in truth preferable to all others, so is there more grace in the ornaments that answer them properly, than in such as are more minutely divided. The air of dignity meant to be conveyed in these fronts, is better seen in this plainness than in the wantonness of more laborious carving.

When this kind of capital is preferred, the architect cannot take a better model than that of the temple of *Vesta* at *Tivoli*, before named, and figured in *Plate XXIII.* and it is very happy that the proportions in that capital perfectly agree with the plainness of the leaves.

When there is a degree more of delicacy in the ornaments of the front, let the architect suit one part to another, by chusing a capital in which the leaves are cut into three at the sides; this is what is called the laurel division. Such a capital, very happily executed, he will find in the temple of *Vesta* at *Rome*; it is finely proportioned in the measures to this division of the leaves, and will very finely become the same kind of ornaments in structure as in division. This may be called the *Corinthian* capital of a middle elegance, and it happily suits a middle degree of ornament in the front of a building.

When the decorations are intended to be carried to the extrem, there is a capital for the *Corinthian* columns that will match them; this is made by giving the leaves what is called the olive division. They are thus divided into five slender parts at the points all up the sides, and in this way are full of work and elegance. The architect who shall want such a capital to match the delicacy and fine small-work of the ornaments, will find it beautifully executed in the columns of the *Campus Vaccinus* at *Rome*.

This is the lightest and most enriched *Corinthian* capital of all the antique. It is very finely suited in its measures to the delicacy of the ornaments; and it will have an air of peculiar lightness in the edifice.

These

These are the rules by which the architect is to suit his capital to the structure: they are new; but they are founded in unanswerable reason. Our builders have been too tame followers of their masters rules; they should have looked up to the examples whence those rules were drawn. We lay them down here before the student in selected pieces of the antique remains; and open a way to those who have spirit and genius to follow their method; by which they will exceed all that has been done in this kingdom, and perhaps of late time in any other: this is the road to fame in the practice of the science. As we have directed the architect on this occasion, to employ or admit a great deal of ornament in his columns, as well as the rest of the front, let us caution him against the intollerable error of some, who, under the name and design of elegance, introduce absurdity and confusion.

Let him give as many decorations as he can to his *Corinthian* order in the last instance; but let them be decorations which are genuine just, and legitimate; such as are established in the reason and nature of things, and not founded on a vitiated fancy: such as can be supported by something in the antique, not such as are the peculiar character and disgrace of modern architecture.

Under this distinction, we are to reject all that has been proposed beyond fluting, for the decorating of the shafts of columns. They were meant to be plain; their plainness is their best ornament: even fluting, which we admit upon the occasion here treated of, is really in itself wrong; but any thing farther is absurd; and what we frequently see practised is monstrous.

As we see jointed columns in the grosser, we find twisted columns in this more light and elegant order.

Though little is to be supported, still something is above, and we can conceive nothing of a twisted shaft but that it is breaking; would any one who had in his choice a smooth and solid bar, propose to support a large weight upon a cork-screw? the absurdity can be no less in twisting the shaft of the *Corinthian* column.

A great beauty in the entire order is the gradual diminution and perpendicular ascent of the shaft, to support and meet the capital, but this is altogether lost in this pitiful device of twisting it. It is essential that the axis of the capital bear upon the axis of the column: and as it is so necessary that this should be, it is proper that it should appear. It is possible for the architect to place the axis of the capital thus over the centre of the shaft, but it is altogether impossible for him to shew that he has done this.

In the best constructed columns of this kind which we see in some of the *French* churches supporting the great altars, the capital looks as if it were placed awry in many lights, and there is no appearance of its being able to support itself, much less the superstructure.

Book III. The next in absurdity to the twisted, is the spiral fluted column. This we see in the *Corinthian* in some of the foreign churches : and there has been bad taste enough to endeavour to introduce it here. In this case the column is entire, and has its regular form and proper diminution, but the fluting, instead of proceeding in straight lines upwards, is wound round it in the manner of those spiral figures we see carried up within the foot of a drinking-glass. This disturbs the eye in its perusal of the order ; it gives false lights which pervert the view of the diminution ; and, to those who have not the strictness of judgment to discover this, provided they have any, it appears unworthy the dignity and beauty of the order ; poor, low, and frivolous. Every false ornament is to be rejected, and these which fancy has introduced without any warrant from reason are all of this kind.

There should be no ornament admitted on the shaft of a column beyond the straight upright fluting, and that rarely.

C H A P. VIII.

Of using the IONIC order alone in the front of a house.

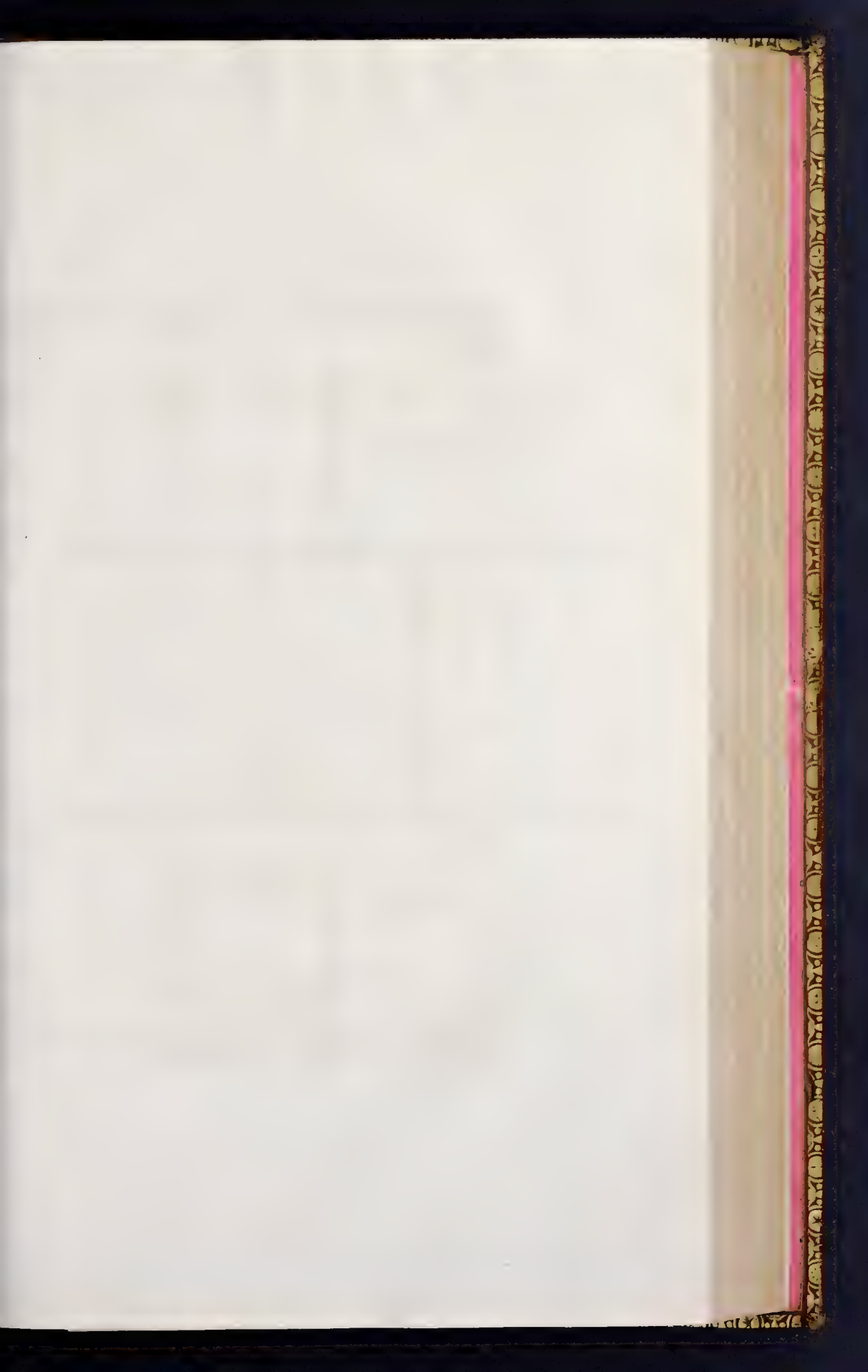
THE variety in the builder's choice for the disposing and decorating but a single order is very great : he has a full scope and field for his genius where the edifice admits no more ; and the variations he may use are almost endless. We shall name the principal of these, and enter more particularly into the examination and description of the best.

The proper place of the *Ionic* order, when used alone, is for a middle and *Attic* story ; a building with no order may be high according to the architect's pleasure, provided he observe proportion, as we have shewn before ; and where there are two or more series of columns, it ought to be, and indeed must be, high ; but in this case, where there is only one series of columns, proportion and symmetry limit the height not to be very great ; and the best method is to have only three stories. The parlours a little above the level of the ground ; the first floor raised over them at some height, and there the columns are to stand ; and over this an *Attic*, contained in the height of the said columns.

This is the elevation of an elegant edifice, and for one enriched with the orders, not expensive.

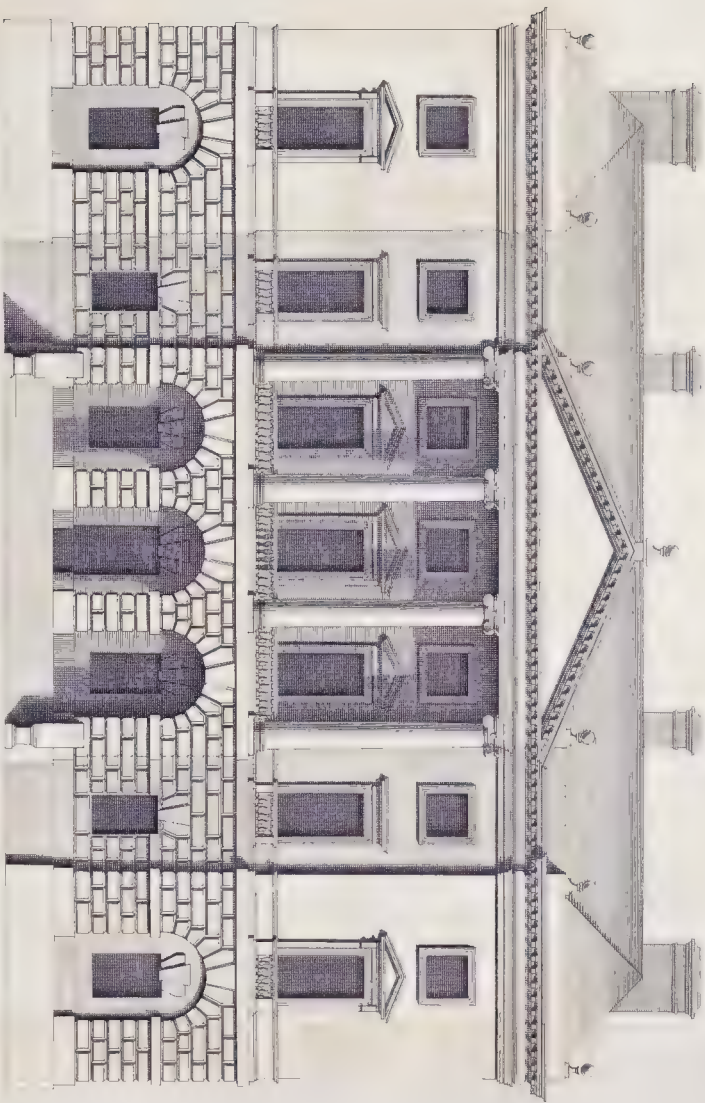
Decorations may be added ; and statues, or some other ornament, may be supported over the columns, but that is at the pleasure of the proprietor.

Custom will authorise the omitting them ; though we have shewn it to be wrong.





L.W.



10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350 360 370 380 390 400 410 420 430 440 450 460 470 480 490 500 510 520 530 540 550 560 570 580 590 600 610 620 630 640 650 660 670 680 690 700 710 720 730 740 750 760 770 780 790 800 810 820 830 840 850 860 870 880 890 900 910 920 930 940 950 960 970 980 990 1000

In these fronts the columns may be continued all the way, or be placed only in what is called the fore front, that is a part projecting a little from the rest in the centre; Chap. 3. and the two side parts left plain or less ornamented all the way.

The latter is the less expensive way, and is the most usual, and indeed, in many designs, it answers fully as well in elegance.

There is another article perfectly in the architect's power, and in which people are not agreed as to which method is best; this is the supporting the entablature in a continued straight line over the heads of the columns, as in the design annex'd; or the throwing it back in the continued parts, and only bringing forward a part of it over the head of each column.

We are sensible that the generality declare for the latter method; but the generality may err. We have observed in another place that the plain straight course of the entablature is the most agreeable to nature and reason: however this other method is not to be wholly disallowed. We consider columns in the front of a building as ornamental more than useful, and therefore we may take liberties in their disposition there, which would not be proper where they were placed for more essential service.

In the *Doric* there occurs a difficulty in this bringing forward of the entablature over the column, because of the disposition of the triglyphs and metopes; wherefore we have chose to speak of it here, in treating of the use of the *Ionic*, as the more fair disquisition.

The result of due consideration will be this; that neither way is to be universally recommended on this particular occasion, but that the entablature may be continued straight, or interrupted by these breaks, according to the nature of the building.

To explain this clearly, the architect must be reminded, that the continuing the entablature straight and entire has a look of strength, and the breaking it by bringing it forward over the columns has an air of lightness. For this reason, if the edifice be more plain, let him use the more plain and solid method in this respect; but if it be of the more decorated kind, let him use the other; for that air of lightness, arising from the breaking of the parts, will agree perfectly well with the other decorations.

The columns, in the plain method of continuing the entablature, appear to support the edifice; but in this other way they stand more light, seem only ornamental, and plainly support nothing but the *Attic* that is raised over them.

This

Book III.

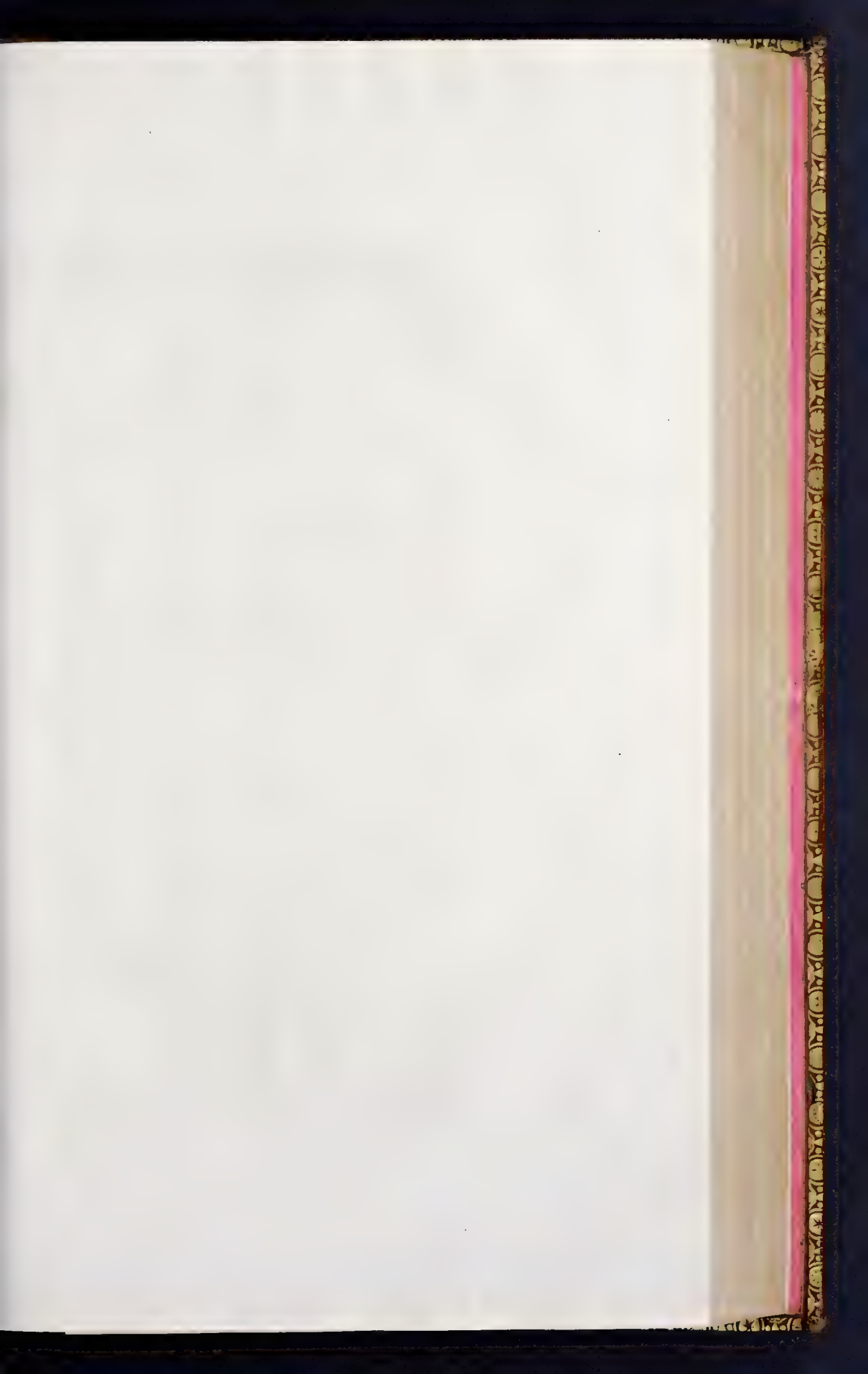
This farther consideration therefore occurs; that, as they support only their proper pilasters, these must of necessity carry ornaments in this case; in the other, the building may much better be terminated by a blocking course at the top of the entablature, because more plainness may be born where there is more solidity; and as the columns have something to support in the building itself, they may be finished plain.

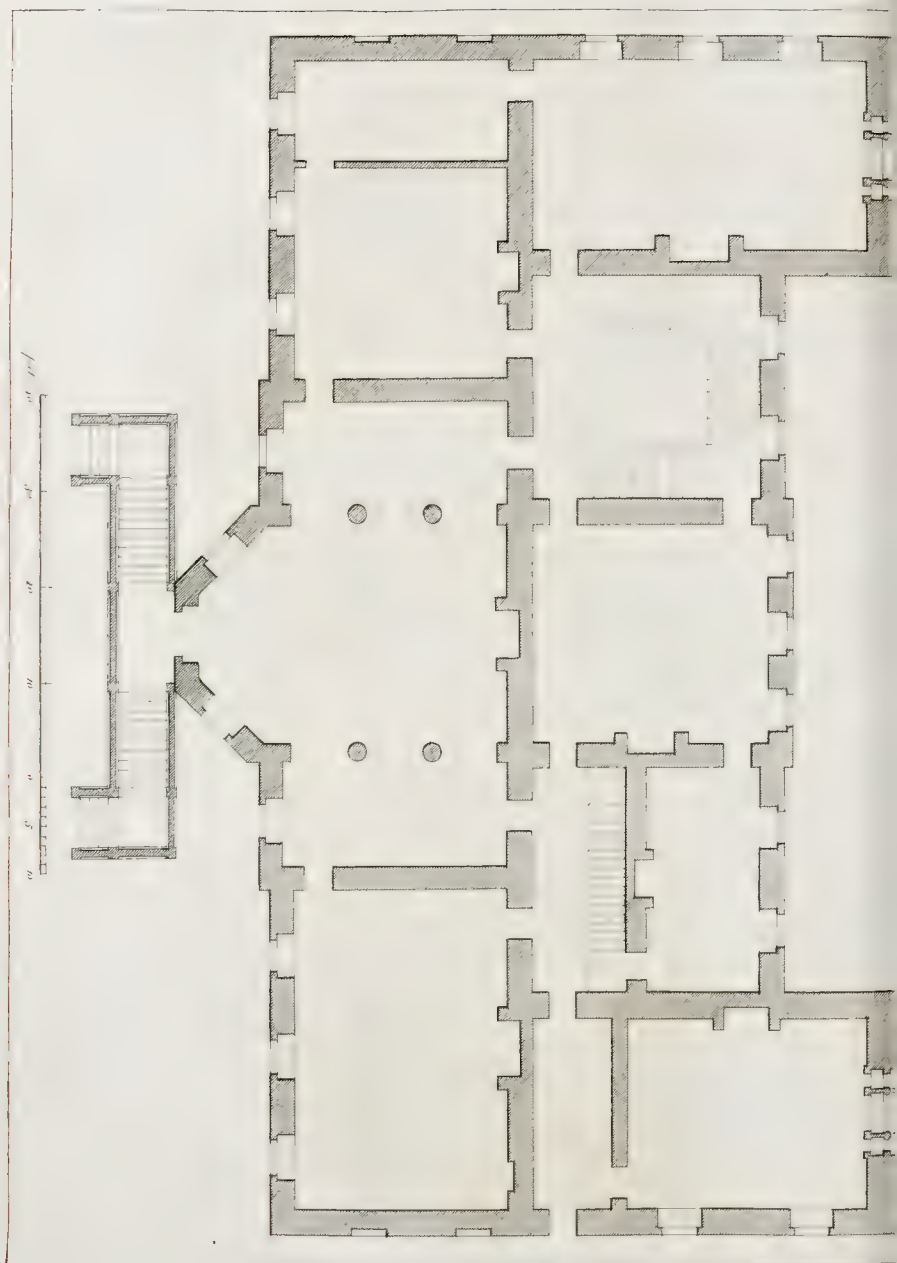
In treating of the *Ionic* order, we have shewn the architect that he has his choice of two distinct freezes in the entablature; it may be raised flat and plain, or it may be swelled out and rounded: this latter is called the pulvinated freeze. This choice is not given without reason to the architect; it is here in reducing the rules to practice that we shew the use of these allowed variations.

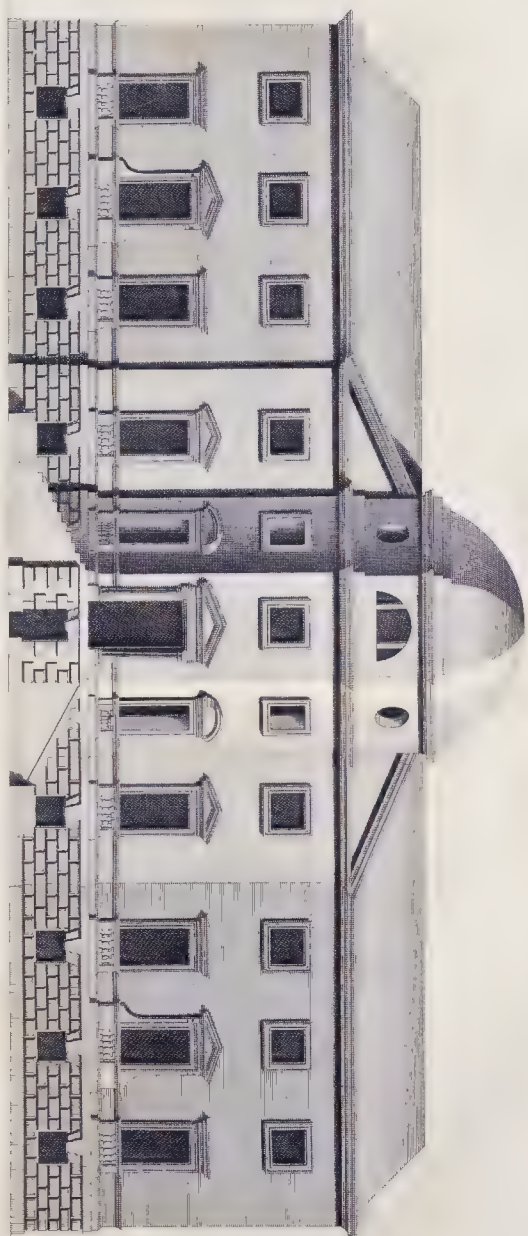
When the entablature is continued plain, and in a straight line, it is best to use the pulvinated or rounded freeze to the *Ionic*, because this has more look of solidity; and, on the other hand, for the same reason, where the entablature is interrupted and brought forward over the columns, he should always chuse the flat freeze.

The reason of this practice is extremely plain: less strength is required in this latter case, and therefore there should be less the air and appearance of solidity; and the flat is by much the lighter freeze for this order.

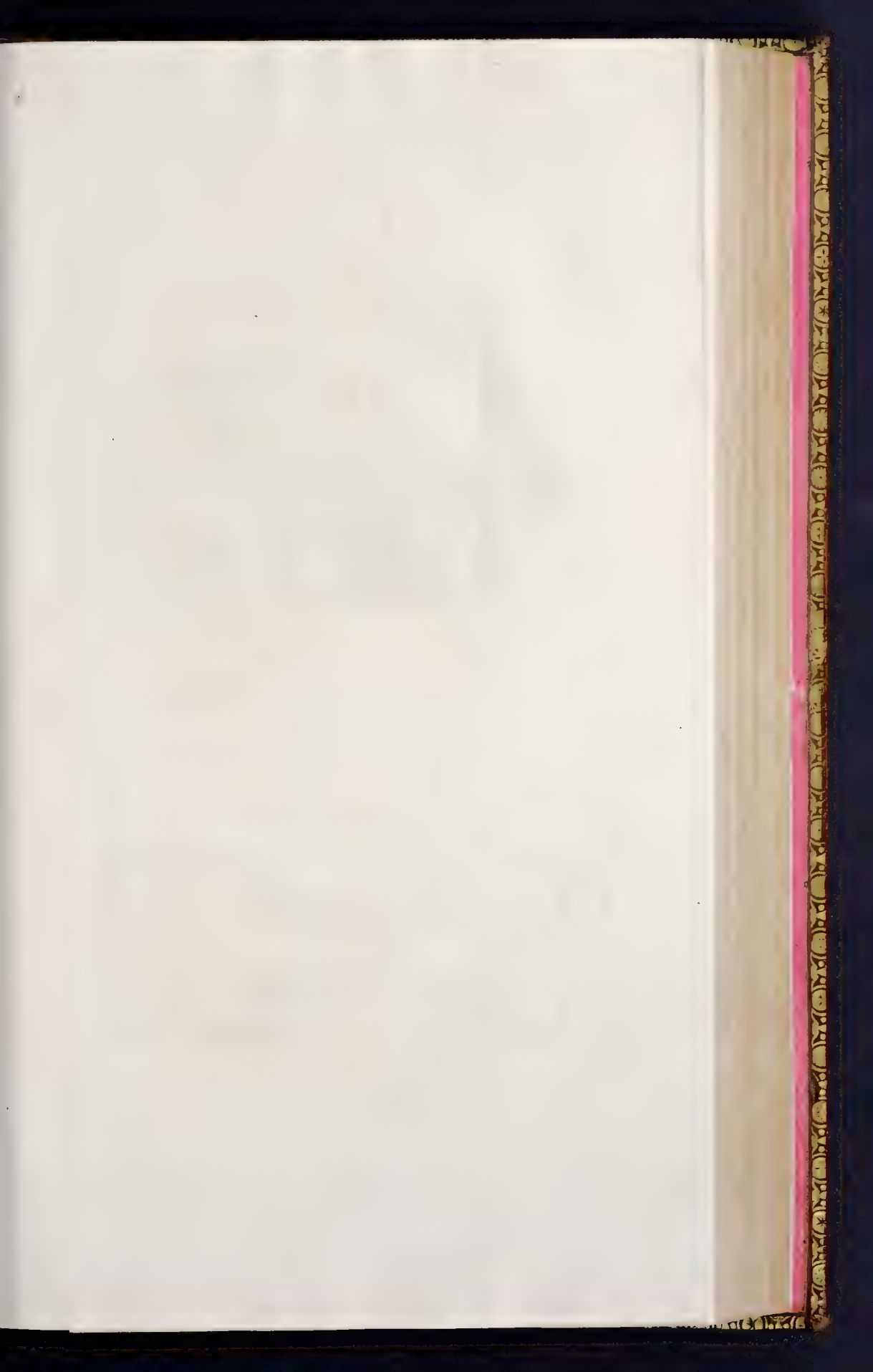
This is a nicety not attended to, but it ought to be universally regarded.







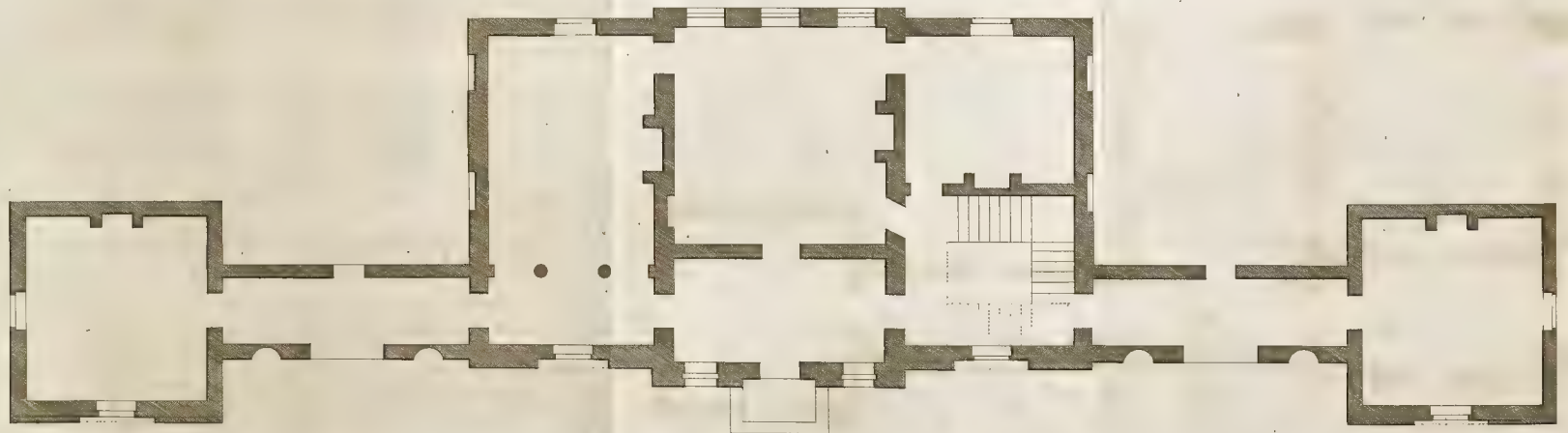




Pl. 48.



Pl. 47.



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Of raising the IONIC in a single series over an arcade.

WHETHER the columns in this single series whereof we are now treating be only placed in the central part, or be continued along the whole front of the building, nothing can be more elegant, or more proper, than to raise them over an arcade; there is an air of continued elegance in this, and the superstructure is no way better supported.

When this is not chosen it may still give a very useful hint; for the imitating this method of building to the eye, by throwing a deep arch over the top of each of the windows in the lower story, will have an extremely good effect.

Thus we will suppose the front raised from the foundation to a foot above the ground, in a plain well-constructed wall, in the same plain but workmanlike manner; and from this let the front rise rustick up to the next story, as in the annexed design.

This will have a very fine effect: a plain fascia is to be carried along to crown this rustick basement: the naked in the deep arches should also be left plain; then the piers between, and all the other parts being rustick, the whole will have a very beautiful effect.

The arch over the door may thus be of the same height and compass with those over the windows, and it will have a very fine effect.

Thus is the front of the ground story raised; upon this is to come a broad plain fascia: this terminates the rustick, and divides the two stories; and upon this are to be raised the columns which are the great decoration of the edifice.

In the elevation of this story, regard must be had to all the ornaments that are to appear upon the front, and the columns are to be constructed accordingly.

The architect remembers he has his choice of two capitals for the *Ionic*, the antique or the modern; we have also given him his choice of two freezes; and there are other variations, though less obvious, which we have named in treating of this order, and all which will come into his eye here; add to this that the columns may be fluted or plain; and that they may be, at his pleasure, set on pedestals, or raised from the fascia without: and he will thus find a great scope for variety.

Book III. In this manner of working all will be conformable to reason, all of a piece, and all proper; in the first case, where there is the pedestal, all will be full of decoration and ornament, all will be light and shewy: in the other the whole order will be executed plain, and perfectly proportioned. There is a stillness and composure in the *Ionic*, when thus executed with a plain shaft, an *Attic* base, and the modern capital, that, to the strict eye, out-does all the fluttering ornament of the other.

It is this way executed at a much smaller expence, and the whole front in which it is used necessarily following the same method, is also less expensive. It were well if this were more considered. The more architecture is reduced to plainness, the more it comes to its antient standard; and where there are least ornaments there is always the greatest regard paid to proportion. This is the article on which the architect should value himself; but the decorations are become the principal regard of most: they should consider that this is priding themselves out of their proper science; the carver, not the builder, shines in these articles.

We see at *Vicenza* two capitals executed by the hand of *Palladio*, and they are very beautiful; but it would have been very much beneath that great man to have valued himself upon cutting them.

The design is the glory of the architect, other hands may be employed on the decorations; and they are what the judicious eye least regards, however they affect the vulgar.

C H A P. XI.

Of raising an upper story with the ATTICK.

WE are content to call any story an *Attic* which has square windows, and is uppermost in the edifice; but the architect should know, that to deserve that name, it should be decorated with the proper *Attic* order.

We shall shew the manner of its construction.

The *Attic* pilasters must have their base and cornice, and one of them must be raised over the centre of each column.

The windows are to stand over the others, between these pilasters, as those do between the columns; and they must so far correspond with the whole, that their cases must have some decoration, though it be less than the others.

At the top of the cornice of an *Ionic*, which terminates the other story, is to be raised a kind of base, or deep plinth; this is to be terminated with a few mouldings, and from these is to rise the body of the pilaster. At the top it is to be crowned with a cornice; this makes the complete *Attic* order, and this, in the present instance, must be made to correspond perfectly with the cornice below in its disposition. If that have been carried on plain, or in a continued line, so must this; on the other hand, if that have been interrupted, and brought over every column, this, in the same manner, must be brought forward over every pilaster. This correspondence of parts gives what the judicious call *harmony* to a whole building; and this is, next to proportion, the great consideration in elegant structures.

Though there may have been ornaments between and over the windows in the story below, there are to be none here. The ornaments about them need be only an architrave.

The cornice, in this case, is not to terminate the building; a blocking course is to be carried along upon it; and this must not be plain, but varied according to the distribution of the parts below. Over every pilaster of the *Attic* there is to project a piece which is to be the pedestal of the statue, when one is placed on the building. This projecture is to be slight, and to answer that of the entablature of the *Ionic*, and the cornice of the *Attic* all the way up; and in this case the breaking the line is a beauty.

Book III. Thus have we shewn the architect how he may carry up a front with a single series of columns in a proper and manner; and either way with perfect propriety: and we shall close the present chapter with recommending to his constant remembrance the rules we have laid him down for constructing his columns in all their members, upon the principles of true harmony, and correspondence in their several parts. To him who shall use the antient variations in this manner they will be of vast service; otherwise they more frequently lead into errors than tend to the perfection of the science.

C H A P. XII.

Of the use of the CORINTHIAN order alone in a house.

WE have observed that there are a variety of ways of employing the columns of any order in a single series in the front of a building; and it were endless, and it is also needless, to recount them all. We shall in this, as in the preceding instance, lay before the student one method of doing it to great advantage, and then leave him to construct others with the same order, upon the principles which we shall deliver as the foundation of the proposed method.

In the first place he is to consider that the *Corinthian* is a very rich order, and that it never shews its elegance so perfectly, as when placed in a single series on the principal story. Therefore, as there is great elegance in the order, and it will appear very plainly in this manner of using it, let him make his house sufficiently decorated and magnificent, in every respect, for it.

In this, as in the former instance, it should consist only of three stories; a good ground floor, a magnificent first floor, and an *Attic*; or at pleasure the lower floor may be sunk a little, and made a basement story, and the columns placed on the floor, to which one ascends by a flight of steps. This method is very beautiful; but the builder at pleasure may pursue the other.

The parlour floor, we would advise, should be raised to a considerable height, that the columns above it may have a sufficient elevation; for these light orders never shew themselves so well as when they are properly raised.

It will be an addition to this lower story if it be built with a rustick face; but this must not be too rude and harsh. Let the architect consider what is to come upon it, and he will know how to execute it so that it may correspond.

We would advise him to build this part in the following manner: let there be a course of plain stone-work from the level of the ground to about a foot high; on

this begin the rustick, and let it be wrought with all possible delicacy, and crowned by Chap. 12.
a fascia.

This is at the level, and should be of the thickness of the principal floor.

Over the top of each window should be carried a strait arch with three key-stones.

There will thus run through the whole an uniformity that is perfectly pleasing, and the divisions and modest ornaments will take off from its otherwise too great simplicity.

Thus the builder will have raised a first story, elegant in itself, and fit to support the superior elegance of that which is to come above it.

On the fascia which terminates this story is to be raised the upper one, whose height must be answerable to the lightness of the order employed in it, and every part in the same manner proportioned.

Under the windows, let him raise a balustrade, in an *Ionic* pedestal. The reason of this will be seen hereafter, in that we shall direct *Ionic* columns to the window. We do not expressly treat of the ornaments of windows here, but as this is an appropriated part it is needful to name it.

In all cases where a lighter order is employed to the entire story, one that is the next in solidity to it may be used for the windows; and in the *Corinthian* decoration nothing is so proper. On this occasion of the use of an order for the windows, let the architect lay it down as a rule, that the only proper one to be employed is that a degree below the other. The reason is plain, because sameness would be poor, and, as the windows may be considered as a separate structure, and have their pediments to be supported, columns are very proper, and may be of another order. To have them of a more enriched order would give an ill contrast to the other columns, which are the principal object, and on which the most decoration should be employed. Thus if, in a front with *Corinthian* columns, the windows had those of the *Composite* order, the eye would naturally be carried up from the capitals of these to those of the other; and it would be lamented those which are the principal in the fabrick, had not at least as much decoration as the others. This is a reason why a superior order should never be used for the windows on those occasions; and having necessarily entered thus far on the subject, we shall add, that as the order next in degree is best, it excludes all the use of columns for the windows when any order below the *Ionic* is used in the main columns.

As the *Ionic* comes in very well here under the *Corinthian*, so the plain *Doric* will very properly answer for the windows, where the *Ionic* is used in the larger columns; but where the *Doric* is the principal order, the windows with their usual ornaments will be most graceful. We see the architect would be necessitated to use the *Tuscan*, and they are too gross for such a purpose.

Having

Book III. Having thus shewn the propriety of columns at the windows, and the kind that must be used, in order to explain the naming of *Ionic* at the windows, we shall go on regularly in the raising this story.

These balustrades being raised over each window of the lower story, the columns are to be placed at equal distance between them. In this case we suppose them carried up immediately from the fascia, without any pedestal.

The architect has however, in this case, his choice; and may either give his *Corinthian* columns pedestals or not.

Having named the familiar way of placing them plain, we shall here add the method when they are supported on their pedestals; this being very proper for the *Corinthian* column in such a place, and requiring a different management.

In this case, the measure of the *Corinthian* pedestal is to determine the rest, and the first thing is to erect one of these pedestals perpendicularly over each pier, between the windows of the lower story. The columns are to be raised in their due proportion over these, and the story is to be terminated by the proper entablature of the *Corinthian* order.

We have explained so much at large the construction of the *Corinthian* pedestal, in treating of that order in a former part of our work, that we need not repeat any thing on that head: it will be sufficient to remind the young architect, that as this pedestal has its base and cap, the mouldings of the base must be continued from pedestal to pedestal; that is, they are to run evenly along the front, at their due height above the fascia.

In the same manner, the mouldings of the cornice of the pedestal, commonly called its cap, are to be continued along the whole front at that height.

Thus there will be mouldings at pedestal height all along, and a naked space between them, answering to the die or body of the pedestal, as these mouldings do to its ornaments.

The upper moulding fixes the height of the bottom of the windows in this story, for they are to come just so low; and under them are to be short balustrades, in the same manner as in the other instance.

As the front enriched with this delicate order, should be in all parts decorated proportionably to it, the architect must use all occasions to break in upon its plainness.

We do not advise him to work this wall with rustick, as that of the lower story.

Instances may be produced to justify the doing it so, if he chuses it, but no name or authority can, in the eye of reason, countenance a practice that is in itself wrong. The rustick is too gross and rude a work to come between *Corinthian* columns;

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lums; and variety, elegance, and beauty enough may be communicated to this part of the structure, without any such device.

Let the judicious architect carry up his wall, as we have said, to the pedestral height in the pedestral form; then let him consider the structure of his windows: a flat wall, altogether un-ornamented, carried up to the height of the columns, would have a dead aspect; but the windows come in here to his relief, and give the means of sufficient decoration and variety.

We have proposed they should have columns of the *Ionic* order; upon these is to be placed an *Ionic* entablature to support the pediment. Now as the mouldings of the pedestals were continued in the lower part along the space between them, so this *Ionic* entablature, raised to crown the column, may be carried along the wall from window to window, and to the ends of the front.

This will break the flat space very happily.

The windows should be finished with a strait arch of rustick, cutting the entablature, and rising a little way into the naked of the pediment; and this, and the sweep of the circular, and points of the angulated pediments, (for they should be varied interchangeably,) will help also to diversify and decorate this plain wall.

Above these it is to be carried up plain to the height of the capital, but there the columns terminating, there is a beautiful opportunity for decoration which the architect must not fail to employ to the best advantage. The *Corinthian* entablature is to be placed upon the columns, and to be continued from one of them to another the whole extent of the front; but if this were all there would be too great blank space of the wall between the tops of the windows and the bottom of the entablature. There is room to break in upon this by a very well-proportioned and well-disposed ornament, which shall be the richest piece in the front.

This is peculiar to the richer orders, but as they are employed in the most elegant edifices, it very happily accompanies them.

We have observed that the entablature raised upon the columns is to be carried along the naked of the wall between them; this gives an uniformity very happily to the face of the whole building; and the same advantage is to be taken of the capital. This is a part of great elegance, and of some depth in the present order: and an ornament proportioned to it may very happily be carried from one column to another, just as the entablature, the whole length of the front; this will give a rich ornament in the stead of plainness, and will appear a regular part of the building: indeed it is more proper in every sense than to leave the wall plain, for it appears all the way to be a kind of capital supporting the entablature, a very natural ornament, and very agreeable to the form of the upper members.

This will make kind of broad fascia, terminated at the bottom by an astragal, and at the top by the lower edge of the architrave.

Book III. This astragal must not be omitted for it makes a regular part; there is a cincture at the top of the shaft of this form; and this, like the rest, must seem continued. The fascia looks like the head of a capital unwound, and this must, in the same manner, appear the astragal unwound and extended in length with it.

The decoration of this fascia is left to fancy, but that has, in some good buildings, been employed so extravagantly, that it is not improper to give a few general hints.

It should not be exactly like the foliage of the capital, for then it would resemble a range of capitals cut off, and we should want the columns that ought to support them; and, on the other hand, it must not be altogether different in its nature, because that would look like things joined by hazard, not connected into a regular building.

Some kind of foliage should be employed in it, because there are leaves in the capital of the order; this will give a general resemblance, and they may be disposed in festoons, ty'd up with masks and other ornaments.

The freezes of the antient edifices are many of them curiously wrought; and that with a fanciful ornament which would come in very happily on this occasion. These will be very fine models for the student whereon to form designs for the carved work of this part: we cannot send him to a better school,

C H A P. XIII.

Of the construction of CORINTHIAN columns in a single series.

WE have, in a late chapter, spoken at large of the variations of the *Corinthian* order, supported by examples from the antique, and have spoken of the choice that is to be made of them, as models for the columns of the same order in an upper series. What we have to say here will be the less, because that need not be repeated; but as these columns, disposed in a single series on the first floor, are nearer the eye, something particular is to be said concerning them.

There are, as we have shewn, three capitals of various proportion, and with carved work of different degrees of elegance, some cut into larger, and other into smaller parts. The capital with the right acanthus leaf is composed of the largest parts; that with what is called the laurel leaf is the next, and the olive leaf, or that where the segments are divided into fives, is the finest.

Now the first rule is, that the more gross division is better proportioned to an upper story, and the more fine and delicate to this part of an edifice, because it is nearer the eye.

This is a general rule, and this directs the architect to use, on the present occasion, the olive leaf capital, such as he will find in *Plate XXIII.* from the *Campus Vaccinus*. That capital is full of ornament, and therefore recommends itself also in a place where the eye will distinguish the workmanship.

This is a general rule, and were there no farther consideration, might be established into an universal one; but the architect is here to take the whole fabric into his eye together, and suit the capital to other considerations, beside that of place.

Where the front is more ornamented in general, there the capital may also be more ornamented; therefore in the richest fronts this light and elegant one will be most proper: on the other hand if the front be in general of the plainer kind, this capital should not be employed for that reason, though it be otherwise proper.

Another consideration is, as we have observed on a former occasion, the placing of the entablature; if it be continued straight there is more the appearance of weight to be supported, and a capital must be chosen which has more the look of solidity: if it project over the columns, and fall back in the space between, this gives an air of lightness, and a lighter capital may serve.

In this last case therefore, the capital of the columns in the *Campus Vaccinus* is the best model the architect can take; but others, or a less decorated kind, are suited to other purposes.

Book III.

The disposition of the entablature affects not only the particular structure of the capital, but that of the whole column; nay its being placed simple, or on a pedestal, is in a great measure to be determined by that also. When the entablature is carried on in a straight line, the whole column must be formed more for strength, because there is in this more an appearance of weight; and then the front should be decorated also with a view to the same design. All must be uniform, or no part will be beautiful; where the columns are to be plain, the front in general is to be less decorated, and where they are to be more light and ornamented, the other decorations must accompany them in the same degree and proportion.

We shall give the student a general idea of this construction in three instances; the one the plainest, the second a middle kind, and the third the richest that can be in the *Corinthian* front.

1. We will suppose a front is to be constructed with a single series of *Corinthian* columns on the first story, and with as little additional decoration as the nature of such a front will admit. In this case, not only a less ornamented capital is to be chosen, but the whole column is to be constructed in the plainest manner; and all its parts and additions must correspond with the general design.

In this case let there be no pedestal, but let the plinth of the base rest upon the fascia of the lower story. Let the shaft be carried up plain, and let the capital be low and simple: let the entablature be disposed in a straight line without breaks, and wrought with all its members, but in the plainest manner.

Here is the *Corinthian* order in its plainest form, but perhaps there is none wherein it appears more beautiful. The expence of such columns, and of a front properly corresponding to them, is much smaller than that of a *Corinthian* front in the usual way; but it is not inferior in excellence: nay, let it be well executed, and it shall be more admired than any other.

Where there are fewest ornaments we see the proportions best of all. The structure and diminution of this elegant column will never be seen in more beauty than thus, and never more praised.

For choice of a capital in this case we recommend that of the temple of *Vesta* at *Tivoli*, the fourth in *Plate XXIII*. The leaves there are the true acanthus, and there is a flower in the abacus which has a singular grandeur; though richer ornaments and finer work would be very well distinguished in this place, they are not to be introduced at the expence of propriety. The soffit in this plain entablature will be large, and will seem to require a solid capital to support it; and there is no *Corinthian* capital in all the antique so maffy as this.

At the same time, though the raffling of the leaves, and dividing them by the laurel or olive compartment, would be plainly enough seen in this situation, and would have a look of great elegance, yet are we not to suppose this plainer capital is at all inferior. What they would have in elegance, this has in dignity; and that is more the point

point to be aimed at in a front of this kind, where there reigns as much solid plainness as is, or can be, consistent with the order. Chap. 13.

The leaves of this capital are as we have said the true acanthus, and there is none in real grace equal to them. The others are fanciful improvements of art; this is the leaf from nature: a leaf celebrated for its beauty by all the antient writers, and indeed vastly superior in its outline and proportions to all those lighter innovations. In a building where the great beauty is to be the keeping the true proportions of the order, it must be very proper also to keep the true structure of the capital. We know *Callimachus* formed the foliage from this plant; and he who had discernment enough to see the beauties of simple nature, would have certainly too much taste to vary from them. There is no room to doubt therefore but that the capital in this temple of *Vesta* is more the true antique *Corinthian* than any other we have remaining. It has been overlooked because of the singularity of its proportions, but it deserves respect for its antiquity. We would have the architect act in this case as in that of the *Ionic*, not reject the antique plain capital because there is a modern one more ornamented, but keep both in his eye on all occasions, and use them in their proper structures, where a plainer or more decorated capital shall be required, according to the nature of the work, in its other parts.

2. We will suppose the front with this series of *Corinthian* columns, is intended to be of a middle degree of elegance, neither so plain as the last, nor so highly finished, or extravagantly enriched as the succeeding: in this case the construction of the columns must be in a middle way, between the lightest and those we have last named as the plainest of all. This is a subject not enough considered, and yet of the greatest consequence; we see nature, reason, taste, and uniformity, all offended in many structures, where it is not easy to say in what the fault consists, which is yet so obvious: it is in this ill choice of the columns, and we shall give exact directions in the avoiding it by a proper construction in each case.

The architect must, in this second instance, avoid the plainness of the former, and yet not rise to the height of lightness: we shall give him very singular instructions.

Let there be no pedestal to the column, and let the entablature be laid in a straight line as in the preceeding: these are the two articles in which it agrees with that, but there are two others in which it is to differ. These are the construction of the shaft and capital.

Let the base in all these methods be the proper *Corinthian*, because it is removed from danger, and will shew itself to advantage.

In this middle method let the shaft be fluted, and let the flutings be cabled to one third of the height, and for the rest empty. Let those flutings terminate at top, not with a sweep, but plain and square; there are instances in the antique to support this, and it is peculiarly proper in that place. The fluting of the columns in that celebrated temple at *Tivoli* are thus terminated square; in such a column we propose to have no flutings at all, but in the present, while they, in this disposition, make a

Book III. happy medium between those of the preceding kind, which are altogether plain, and those of the following in which they will be altogether open; this squareness at the top will happily correspond with the structure of the capital we are about to direct to be chosen.

The architect by this time so far enters into our design, that he is sensible he is to chuse a capital not so plain as that of the preceding description, nor so elegant as that of the *Campus Vaccinus*. The middle degree of fineness, between the acanthus and the olive capital, is the laurel; this therefore is proper in the present instance.

We shall direct him to use such a capital on this occasion; and, in the construction of the abacus, to cut it with a sweep in the usual way, but not to take off the corners. Let these be entire, and run out sharp; many an architect will cry out against this, but we have shewn already, that although it be not common, it is supported by the antique; and we shall give him for a model, in this place, the very capital we named on that occasion; that of the temple of *Vesta* at Rome. This is a capital exactly suited to the present purpose; it is of a middle proportion between the *Tivoli* capital, and that of the *Campus Vaccinus*, and it has the corners sharp; the laurel division is finely made out in this, and nothing can be so proper for the present occasion.

3. We are to suppose our front is intended to be raised in the most elegant and rich manner. To this purpose the construction of the order is to be varied from either of the former, and it is to have altogether a new character. We are aware how singular a manner of writing this will appear to the common class of readers, for the ordinary architect supposes the *Corinthian* order to be the *Corinthian* order, and knows no variation in it. *Palladio* is his deity, and if he works according to that author's direction he supposes he must do right, and he will be ready to think those who do otherwise will do wrong.

We enlarge his mind, we send him to school there where *Palladio* studied. The ancients, our great and only proper masters, varied their works, with respect to us, in vain, if we are too poor in spirit to comprehend, or too limited in imagination to follow them. Time has to no purpose spared the remains of so many of their great works two thousand years, if we refuse to take them as models.

We propose to the judicious and spirited architect to adopt all their beauties; and we shall shew him, in these instances, how they used, and to what end devised them.

We have gone through the consideration of a *Corinthian* front in the plainest and in a middle manner; we are now to lead him to the most light and elegant. Let him, in every part, retain this idea, and he will every where comprehend what we are saying, and be able to transfer the same observations to many other subjects.

In this case the column is to be made every way light and airy. For the first article therefore, let it have its proper pedestal: in the two preceding designs, the plinth of the base has rested on the fascia; here the proper pedestal of the *Corinthian* order is to be raised and enriched with all its ornaments.

On this is to be placed the shaft, which must be fluted; the flutings must be left ^Chap. 13. empty to the bottom, and they must terminate in a sweep, or circularly, not in a strait line, as the preceeding.

Thus we shall have a light, beautiful, and elevated column. The capital for this must be the lightest and richest that can be found among the antique, and consequently note so proper as that of the columns in the *Campus Vaccinus*, the last in *Platè XXIII*, for a model.

The entablature, in this case, should not be carried on in a strait line, because that, though the most universally proper in strictness, yet is heavy; and here all should be light. Therefore the instance, of all others in which the bringing the entablature forward over the columns is most agreeable, is this. The form and working of the whole shews that these columns are placed for beauty and decoration more than for strength, or as supports; and therefore the entablature may be laid in this broken or interrupted manner.

This will give a consummate air of grace and elegance to the whole. The columns will appear perfectly airy and disengaged, and there will run through every part that lightness which is the characteristic of the order.

We have observed in general that in these several cases, the other ornaments of the front are to be made to correspond with this of the order employed. The series of ornament we have directed to be continued along the building, under the entablature, and answerable to the capital, is the field for greatest beauty in this article; and the place where the most strict propriety is required. In this therefore let the ornaments always carry an air of resemblance to those of the peculiar capital that is used. This is the most striking article of all.

Of the upper or ATTIC story in the before-mentioned house.

EVERY part is to be made correspondent to the whole in such an elegant structure as we are here describing, with the most nice regard to propriety : this is a general rule ; but let the architect beware it does not mislead him on some occasions. Though every part is to be adapted, every part is not to be equally ornamented ; and that which might be correspondent to the whole in a general sense, may yet be out of its place.

This is to be particularly considered with respect to the *Attic* over the principal story in this kind of house. To load it with ornaments would be not to depart from the character of the rest of the building, but it would be to depart from reason and propriety.

The *Attic* is a story of little importance, therefore it is not to be decorated in the manner of the more noble apartments ; and it is placed so much above the eye, that fine ornaments could not be distinguished on it.

It must not be entirely plain, for that would be to lose all uniformity in the building ; therefore it must be decorated with discretion ; its own proper pilasters with their finishing being the principal parts.

The builder is to consider that the principal story is to attract the regard. That below we have directed to be so constructed that it has decoration in some degree correspondent to that above it, and yet not at all so as to interfere with it ; and the same must be the judicious conduct with respect of that above.

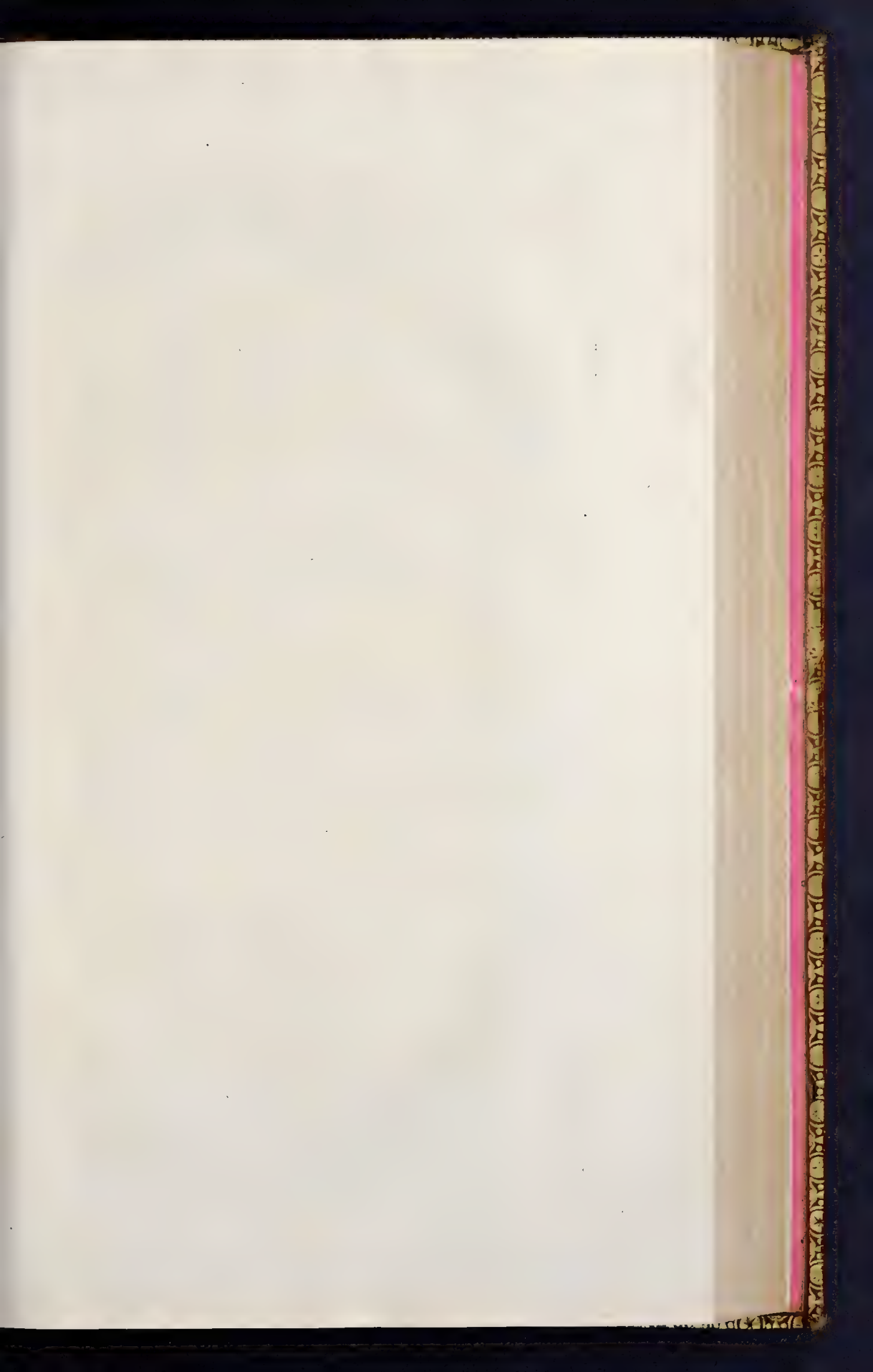
Having thus given the general idea of what is to be intended in this *Attic*, we shall lay down some rules for its construction.

The form of the windows of an *Attic* story every builder knows : they are to be square, but this is not a rule that must bind him to inches one way or another. It is certain they should not be higher than they are broad, but there is no rule against their being somewhat broader than they are high. The excess in breadth must not be great, but it may, with caution, be often admitted in a due degree, and on no occasion better than the present.

As the principal floor will, in this structure, be lofty, we would have the *Attic* low. It gives a greater air of dignity to the other, which is the great thing intended, as that is the principal story.

To

* * As the three Corinthian fronts could not be given in this number, and any one of them would have been inadequate to the design, we have, in their place, given an elegant edifice of another kind ; the plan and elevation of which so perfectly shew its structure in every part, that it needs no explanation in words.



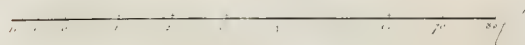
Plan of the lower wall of the temple

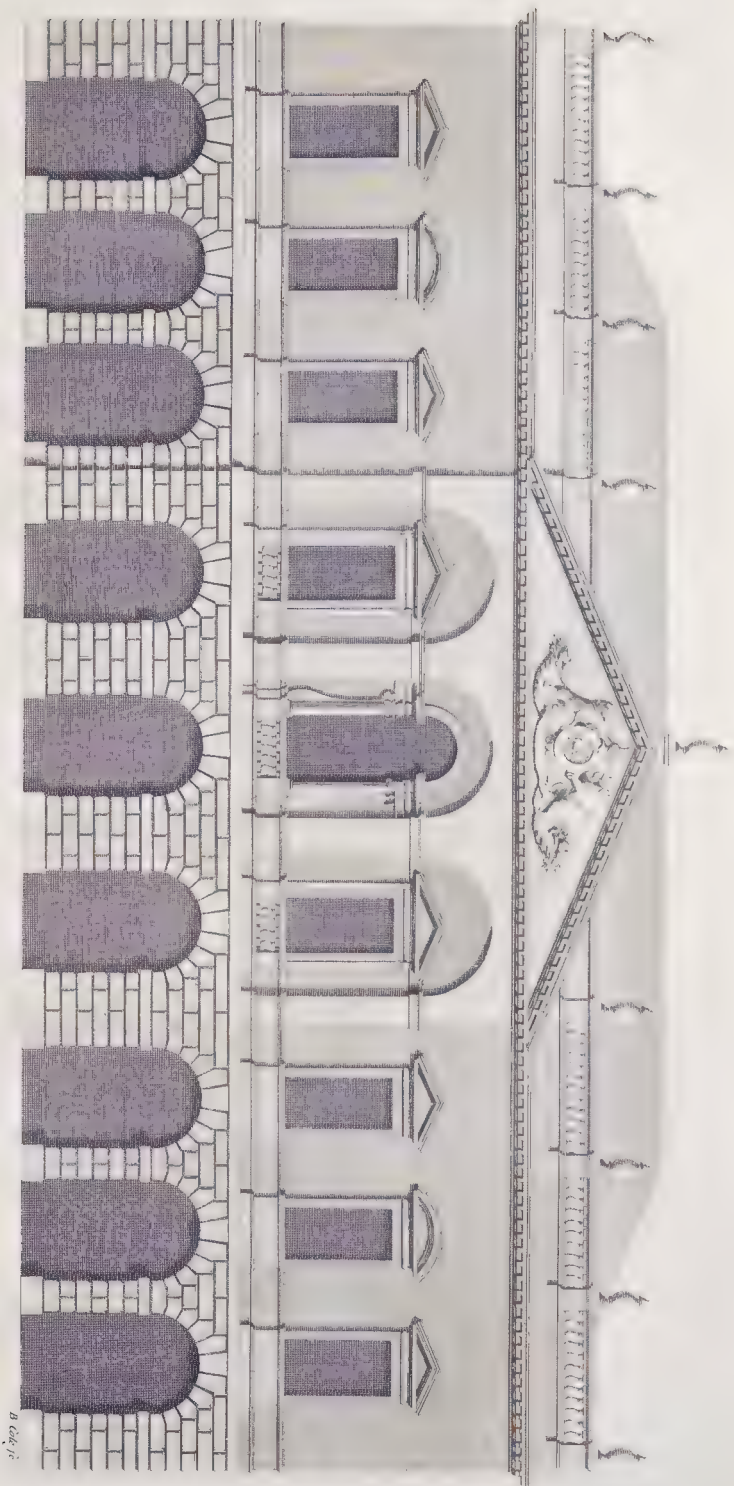


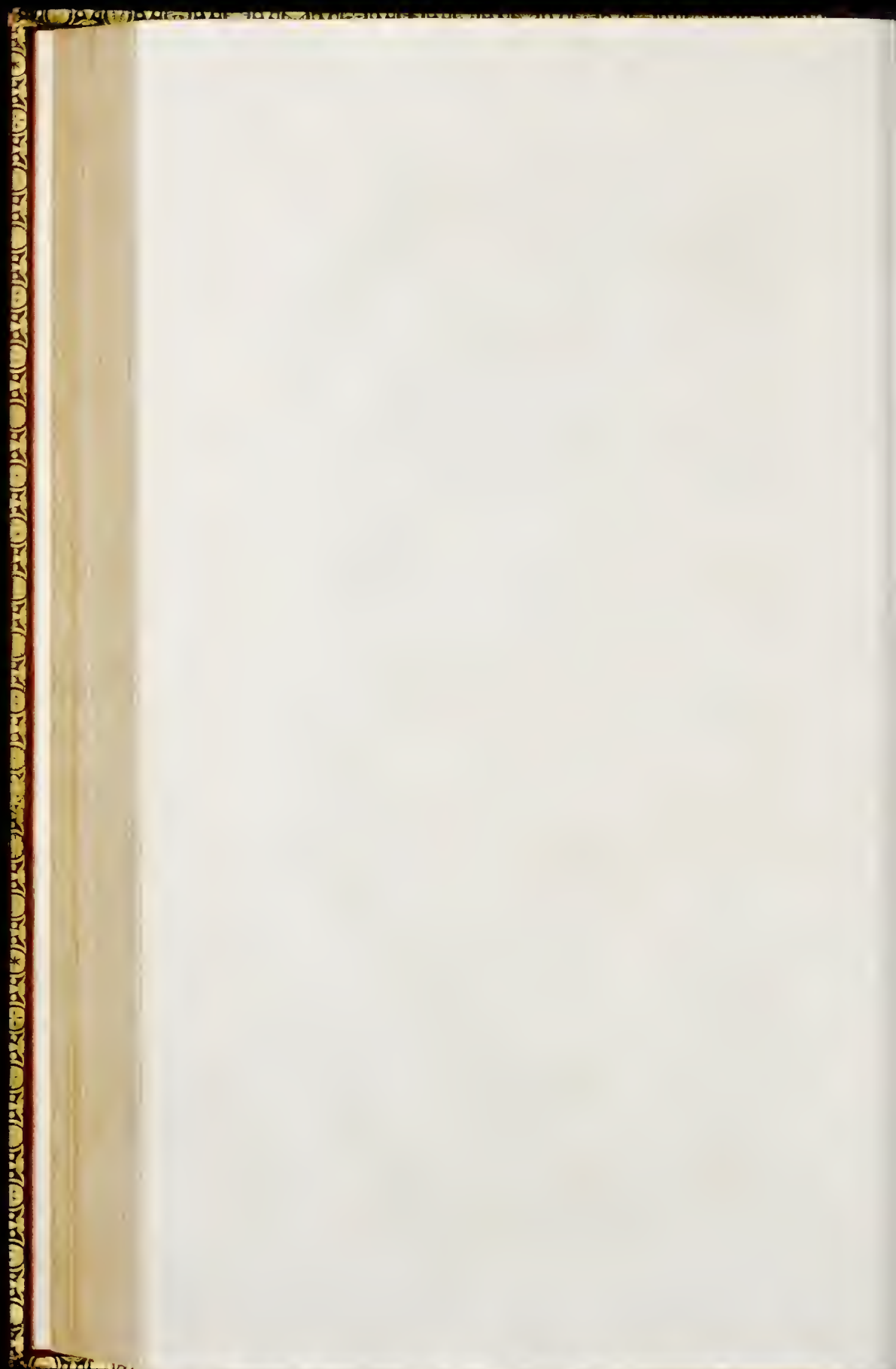
Plan of the upper wall of the temple

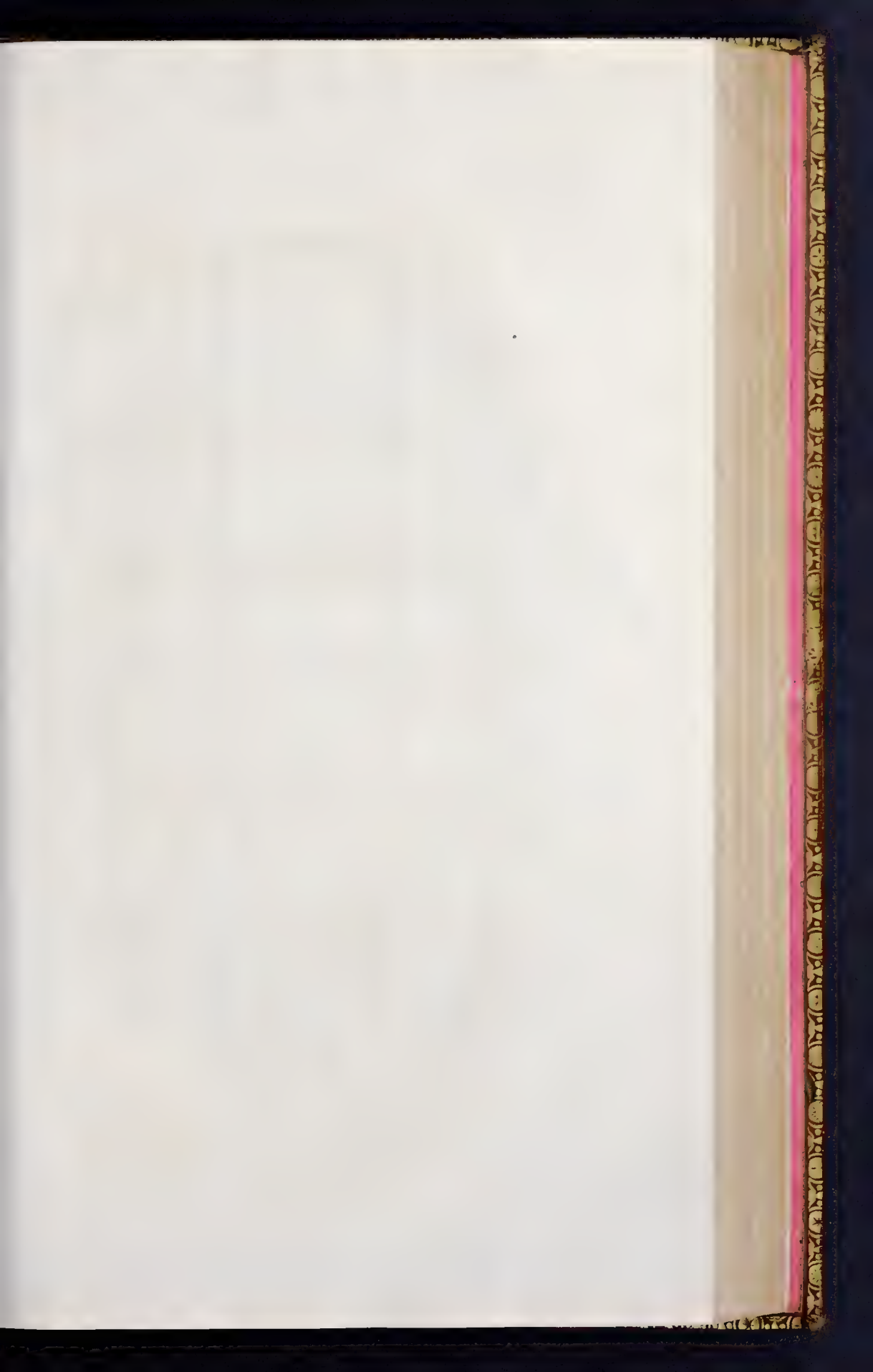


Plan of the altar of the temple



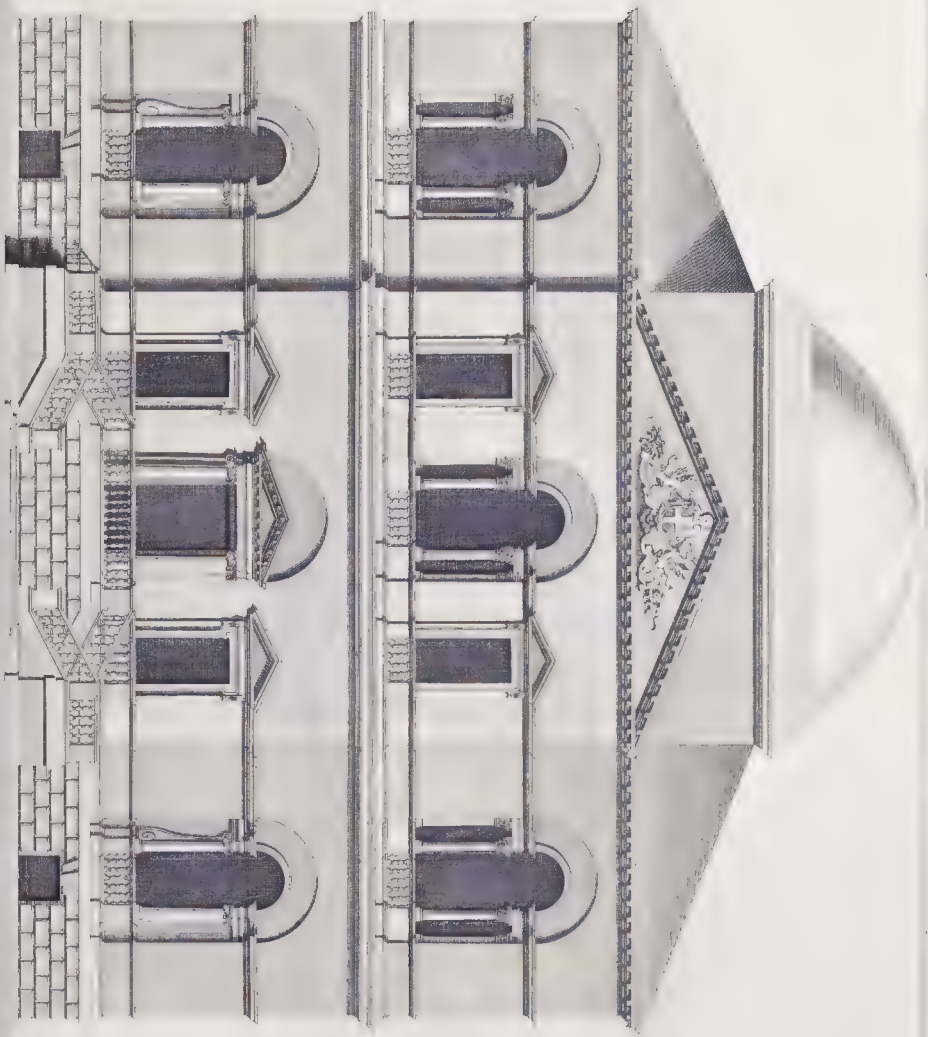


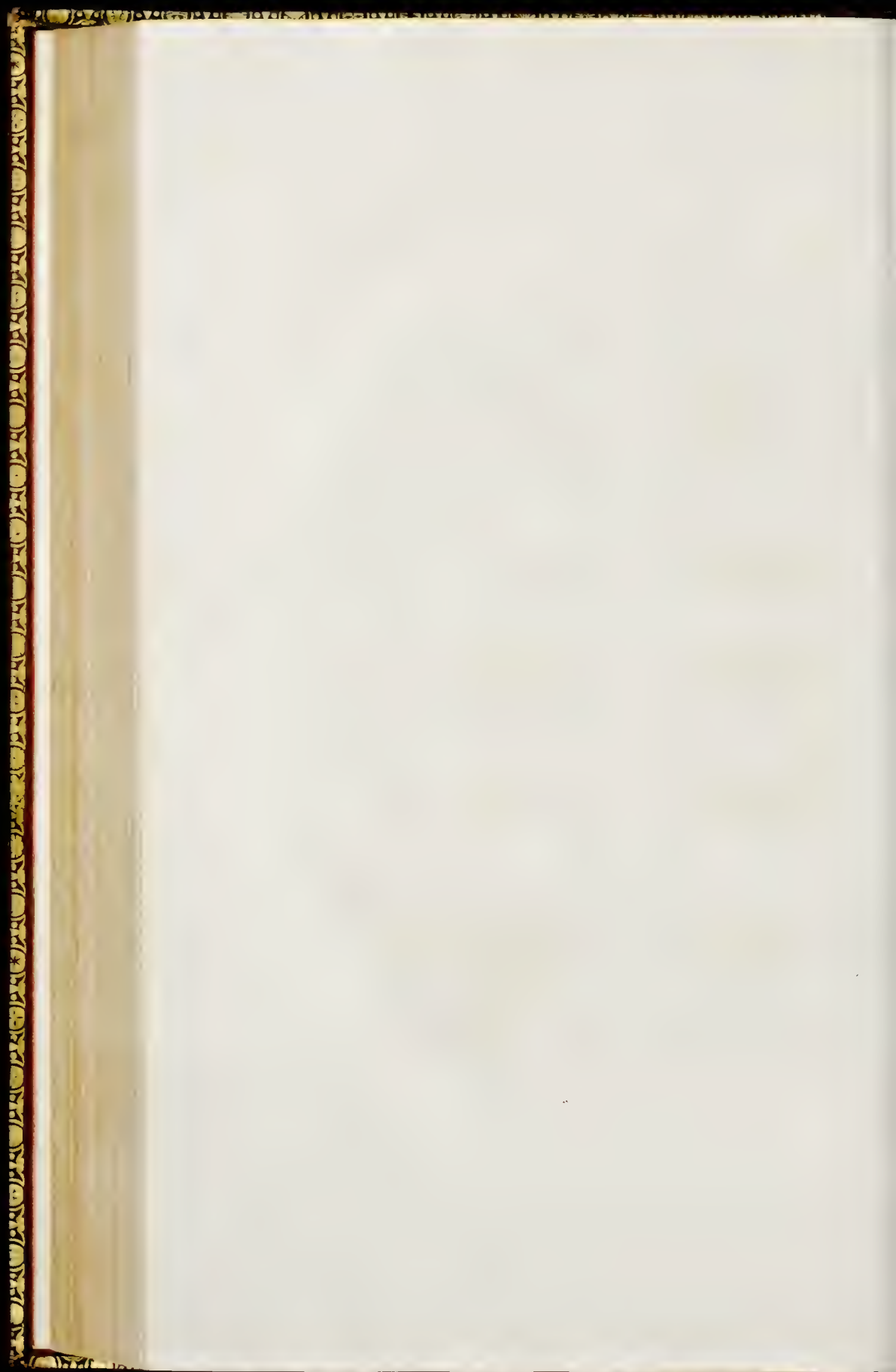




Plan of the building for good p. 11. House in 1870







To this purpose the windows of the *Attic* must be low: but they must also, for the sake of proportion, have some tolerable extent. As this cannot be given them upwards, they must be allowed it sideways, and on this depends the propriety of giving them in this case more breadth than height.

One of these windows in the *Attic* is to be placed exactly over every window in the story below: and as the piers between those windows below are decorated by the *Corinthian* columns, these piers between the windows of the *Attic* story are to be ornamented by pilasters of the proper *Attic* order.

These must have their base, die, and cap, in the manner of pedestals, which they resemble very much in such a low *Attic* as we here prescribe, and they serve also in the place of such to support statues, or other ornaments.

As a window in the *Attic* will come over every window in the lower story, so a pilaster of the *Attic* order will rise directly over the axis of every one of the *Corinthian* columns. If the nature and disposition of the front have required in any part that the columns should be coupled, as at the corners, or under any projection, in that case, the *Attic* pilasters are to be coupled also; one standing as a crowning of every column.

We have before shewn, that these being meant to support figures, or other pieces of ornament, the purpose is not answered when they are left naked; and as this is in any case a deficiency, it is least of all to be suffered in a front that is of so ornamental a kind as that we here describe. Therefore let it always be a part of such an elevation as this, that the *Attic* support something ornamental on every pilaster.

These pilasters will give a very beautiful air to the front of the *Attic*, and to add to the decoration, the windows must all have stone cases, though not very much ornamented; and, as the space between the window and next pilaster will be large, this may be decorated by a raised panel.

This will be ornament enough for the *Attic* story: less would set it below the rest of the front, and more would be puerile.

The cornice of the *Attic* is to be carried all along the front; and the finishing is to be a blocking course behind: but in front there should come over the head of each pilaster a kind of square plinth for supporting the statue, or other ornament.

The reason of this is, that the figure may be a little raised, and the whole seen; if the statue, or other decoration, were placed immediately upon the cornice of the *Attic*, it would look poor and flat. The eye of the spectator is also to be considered: That is, in these cases, placed below, and unless the figure were raised upon this little kind of pedestal, the lower part could not be seen.

Book III. Thus will the student understand the use of the *Corinthian* order in a single series, in the front of a house, in all its latitude. He will see the variety in which he may dispose it, and how he ought to adapt the several forms and constructions, according to the rest of the ornaments, and the elevation of the building.

We have sufficiently treated before of the article of proportion, and he will now very well understand upon those principles how every part is to be disposed.

In general, when the elevation is greater, the lighter and more ornamental kinds of this order are fittest for service; and when it is less, and the whole building lower, the plain shaft without a pedestal, and the plain capital, that is the *aeanthus* leaf capital, is the most proper to be used.

With respect to the *Composite* order, the general method to be observed is the same. The more the front is in other respects decorated, the richer that is to be executed; but in general, as it is an order full of work and ornament, it is in its nature more proper than any other for a front intended to be loaded with decorations.

C H A P. XV.

Of the use of the Composite order in a single series.

THE *Composite* may be used, as we have just observed, in the same manner with the *Corinthian*, and subject to all the same variations; but there is a method of employing it in a single series, which is seen at this time in some celebrated houses in *Italy*, that is peculiar; and though against general rule and strict propriety, yet must be acknowledged to have, in those edifices a very noble effect.

This is the raising the columns of that order from the ground, and carrying them up to support the *Attic* of the upper story.

It will be conceived at once, from this disposition of the order, that it must comprehend more than a single story. It is true that this is wrong; but there is sometimes, in the way of the perfect architect, a manner of making things beautiful that are liable to objections. In that case the order will comprehend naturally two stories, and support the *Attic*; and it may be said sometimes, in the way it is used, to contain four; there being a mezzanine between a part of the parlour and first floor story, and another between the first floor and the *Attic*.

We shall shew the student how he is to erect a building of this form.

The parlour floor must be raised a few steps above the level of the ground, and the columns, which as they are intended for this great height must have their pedestals, must be raised upon a solid course, or continued socle.

The

The first thing therefore is to raise this socle of sound, firm, and even stone-work, ^{Chap. 15.} some little height above the level of the ground; and on this, at proper distances, are to be raised the pedestals of the *Composite* order.

These will give the height up to the bottom of the windows, and will determine all the intermediate parts whose ornaments are to run pedestal height, and pedestal fashion, and are properly to be continued from the mouldings of these pedestals.

The base and its mouldings, executed according to the rules we have before laid down, are to be continued on the plain wall between. In the same manner the naked of the intermediate wall is to be left quite plain the height of the die, that being also plain; and the mouldings of its cap, or cornice, are to be continued above this plain part in the same manner as those of the base.

The wall will be thus raised to the pedestal height in its proper form, and from this part are to arise the ornaments.

The order are to run to such a height that they may very well comprehend two stories, the abacus of the capital ranging with the top of the window-case in the upper story.

The columns being thus far understood, we are to begin to raise from the plain wall of the pedestal height the rest of the fabric.

Between the columns are to be made the windows, one over another regularly in each story; and the two stories are to be determined by another order.

We have, in a former chapter, shewn the method of decorating the intermediate wall, by the entablature carried from columns raised to adorn the windows, and support their pediments. The very same method may be followed here; but we shall also lay down one altogether different, though upon the same principle, that the architect may see he is not ty'd down too strictly in this method of decoration.

At the angles of the front let double pilasters be raised, of such a height as to comprehend the parlour floor, and by the cornice of their entablature to support the lower ornaments of the first floor.

The double pilasters being ranged at the angles, let half pilasters be raised in the same proportion behind all the columns.

These must have no pedestal, and they must be raised from the cornice of the lower or plain wall at the height of the pedestals of the great columns.

The student will remember what we have determined in a preceding chapter with respect to the inferior order that comes in behind a larger, only by way of partial decoration. The rule we established was, that it be always the order next below that of the principal columns.

Book III. In this case therefore, the large columns being *Composite*, these pilasters must be of the *Corinthian* order.

The proper base of the *Corinthian* is to be used for these, and their capitals should be of the lighter kind; *Palladio's* capital, which we have given in *Plate XXIII*, may perfectly well serve for a model.

The regular *Corinthian* entablature is to be placed over these, and continued from one to another in a straight line; and thus, though the principal columns run up to a much greater height for the support of the *Attic*, this story will be very well terminated.

Between every two windows of the parlour story will run up the shaft of one of the principal columns, and an half pilaster on each side; the naked of the wall will not therefore be seen in any great quantity; but the best construction of it is rustick.

The windows of this story should have no ornament at their sides, but the edge of the plain rustick. The reason of this is, that being in a lower story they should not be too much decorated, and that there are pilasters between them.

When the wall is carried up thus high, and the top of each window is covered by a straight arch, the architect will perceive, that if he have observed a due proportion of parts to the whole, according to the rule we have laid down treating of that part of the subject, there will be a considerable space between the tops of the windows and the entablature of the *Corinthian* cornice from the pilasters.

This he must preserve for the making the principal rooms of the parlour floor lofty; but as it will naturally happen that, toward the corner, there will, in a good disposition of the parts, be a small room on the same floor each way, these will not require, nor indeed by any means admit, the same height as the larger apartments. Here comes in the natural place and the natural use of the mezzanine story, which, to be distinct, we shall treat in a separate chapter.

Of the place and use of the mezzanine story.

WE have shewn, in our first chapter of this treatise, under the head of explanation of terms of art, what is meant by a mezzanine story; and we are here taking the first opportunity which has naturally offered in the course of the work, to explain to the student its nature and proper use.

A mezzanine is a small story between two large ones: and in this structure we shall shew it, in a double disposition, between the parlour story and first floor, and again between the first floor and *Attic*.

Though we call it, in compliance with custom, a story, yet it is not to be understood that there is a necessity of carrying it, like the others, through the whole building: on the contrary, that is not its natural or reasonable use.

It is properly, as we shall shew it here, a room in some part, not in the whole of a building; repeated at a certain distance, but not continued; and is made out of that height which is to spare in a smaller room, but is wanted in larger apartments of the same floor.

It is very natural that there should be such small rooms upon the same floor with large ones in many good houses, and this judicious construction gave the first hint of the mezzanine story.

Our architects seldom use it, and more seldom understand it: we shall not be so cruel to them as to recite instances of those buildings where it is used in *London*; but if the reader cast his eye upon some of them, he will find the mezzanine consists of a complete dwarf story, between the parlour and first floor; and is of a great deal of prejudice to both, while it can be but of very little service in itself.

These people had heard of a mezzanine story, and they resolved to make one: taking the form into their consideration, at once, without any knowledge of the origin or design of the story, they have, for the sake of a parcel of useless low rooms, and for the showing a range of little windows, made their parlour too low, and raised their first floor story out of proportion.

We name this as a caution to the young architect; we shew him the conduct of this sort of builders, that he may know what he is to avoid. This is the weak and improper use of the mezzanine story; and, having fully informed him of the error of these builders, we shall lead him to the true use of such rooms by an example in the present instance.

Book III. Let him recollect how far we suppose him to have now proceeded in the elevation of his edifice. He is at the top of the parlour windows; and he has a large space between the strait arch that terminates or covers them, and the entablature of the *Corinthian* pilasters which are the interior order.

We will suppose this house to have, in the upper story, seven windows in front; then on each side of the door there will be, in the ground floor, three windows. Two of these will enlighten a very handsome parlour: to admit all the three would be to render it disproportioned. This is an article that concerns the inner distribution of the house; we have treated it at large before, and therefore need only refer to it here as a point established upon those principles.

Here is on each side the door a parlour enlightened by two windows, a large and well-proportioned room requiring all the height we have given to the ground story. Thus the room is disposed of within; and on the outside, as this is an elegant structure, in the space between the top of each window, and the cornice of the *Corinthian* pilasters, there may be placed a square compartment of stone-work, plain or wrought, according to the greater or lesser decoration of the general front. The bottom of this square compartment must rest upon the top of the stones which make the strait arch over the windows; and its top must be crowned with another strait arch of the same kind. The reason of this, and the part with which it will correspond, we shall shew presently.

Here therefore is the room, in respect of height within, and the space without, very well, very properly, and very ornamentally disposed of, in the two windows on each side nearest the door.

There remains toward each corner a single window. This answers to a proper space within, and has its height on the outside just as the others.

The question now is how to employ this part of the edifice.

The space naturally belonging to this window in the inner disposition of the house, will make a very good room; but, as it is a great deal smaller than the other parlours, there is no reason why it should have their height: indeed it cannot, nor must. We have shewn before what is the proportion of height to length and breadth in rooms, therefore the height of this room must be terminated at its proper place; its ceiling must be laid there, and there will consequently be a very considerable space over head, between this ceiling and the floor of the upper story. This may be left vacant if the builder please, and a false floor laid to bring all the upper story to a level; but the judicious architect will never suffer any room to be lost in a house. Here, in every instance of this kind, was so much room not employed in the usual way, and this gave the hint to the mezzanine story.

The builder having this space at the top of his corner room on each side, may, if he please, cover it up thus with a false floor, and leave it vacant to be a harbour for rats: but it is best to employ it for a mezzanine. If he determine to make no use of it, the front is to be continued in an uniform manner, and a compartment is to be placed over the window in this place as in the other.

We advise him however to act with more judgment: we advise the making a mezzanine room of this space at each corner: and, in this case there will be a window in this space of the shape and figure of the compartments over the other parlour windows; and this, far from being a blemish, will diversify the front of the house, and be a great beauty.

The mezzanine room he is to construct within upon the rules of proportion we have before laid down, and the two at the two corners are to correspond with each other in shape and office.

The *French* use these for wardrobes; the *Italians* for places to lay things out of the way; and in *England* they are generally lodging-rooms for servants, when upon a higher floor, and offices when upon a lower.

The *Italian* architects were the inventors of the mezzanine rooms, and we may see by the use they made of them, how light they held them.

The construction of the room below this mezzanine must be proportioned to its height, as that to its space in length and breadth. The window also must be proportioned to the height; therefore it must not be so high as those which enlighten parlours that are so much more lofty. The window may, by a faint, be made to equal the others on the outside if the builder pleases; but the best method is to make it lower, proportioning it in aspect, as in use, to the room it is made to enlighten.

We have before given the architect his choice, to make a mezzanine, or to sink the space over this room in a false floor. According to the method he takes in this respect the window of this room is to be formed: if he make no room, the space above in front we have said is to receive such a compartment as is over the rest; and, in that case, the window must certainly be made of the same height with the others. This uniformity demands; but, in the other choice, which is much preferable, of making a mezzanine in the place, the window should be lower, and appear just what it is. We have observed that the mezzanine window will have a very pretty effect in diversifying the front; and the same is the case in respect of altering the proportion of the room below it.

The architect now understands what is the proper use of this space; we advise him to form a mezzanine in it: and, having explained to him the nature and design of that kind of room, we shall proceed to the raising the front in that design.

Of finishing the front of the lower floor in the abovementioned house.

THE Student, we hope, so far understands the design of the plan in the construction of this house, with a single series of *Composite* columns from the ground, that he will not propose the varying the window at each corner.

We have directed to carry up a *Composite* column to the *Attic*, between every two series of windows; the shaft of this column will therefore rise between every two of the parlour windows, but there will be no column beyond the last window each way toward the corner. This is therefore in itself a detached and separated part of the front, and becomes susceptible, for that reason, of variation. This variation, properly conducted, will be of great beauty to the whole.

In the present instance, the making the corner window lower than the others forms a line of great propriety and beauty, much preferable to that straight horizontal line which would result from their tops all terminating equally. The bottom of this window must stand in the same line with the others in the cornice of the pedestal high plain wall, but its top must be considerably lower; this being made equally so in both extremes will very well set off the middle; and these windows, by being lower, will agree better with the coupled *Corinthian* pilasters which are placed at the angles of the building.

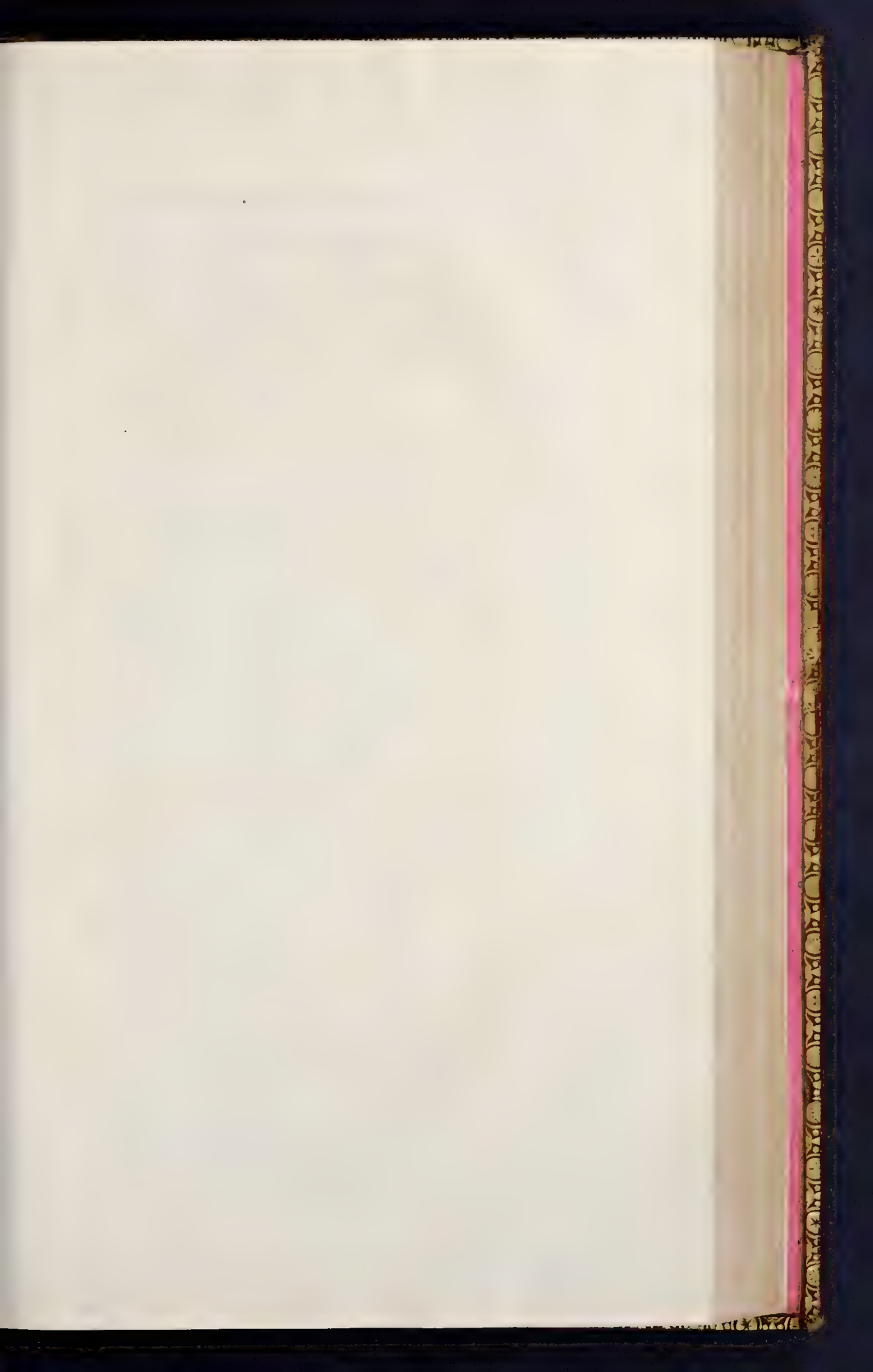
The window of the mezzanine must correspond with the compartments over the other windows; but in this there is not any strict measure of conformity required. It may be a little larger, and the inner space often requires it should be so; in this case its bottom will come something lower, as well as its top something higher. But with this allowance the bottom of the mezzanine window will not come nearly so close to the straight arch over the other, as the compartments do to the arch of the loftier windows which are between the columns.

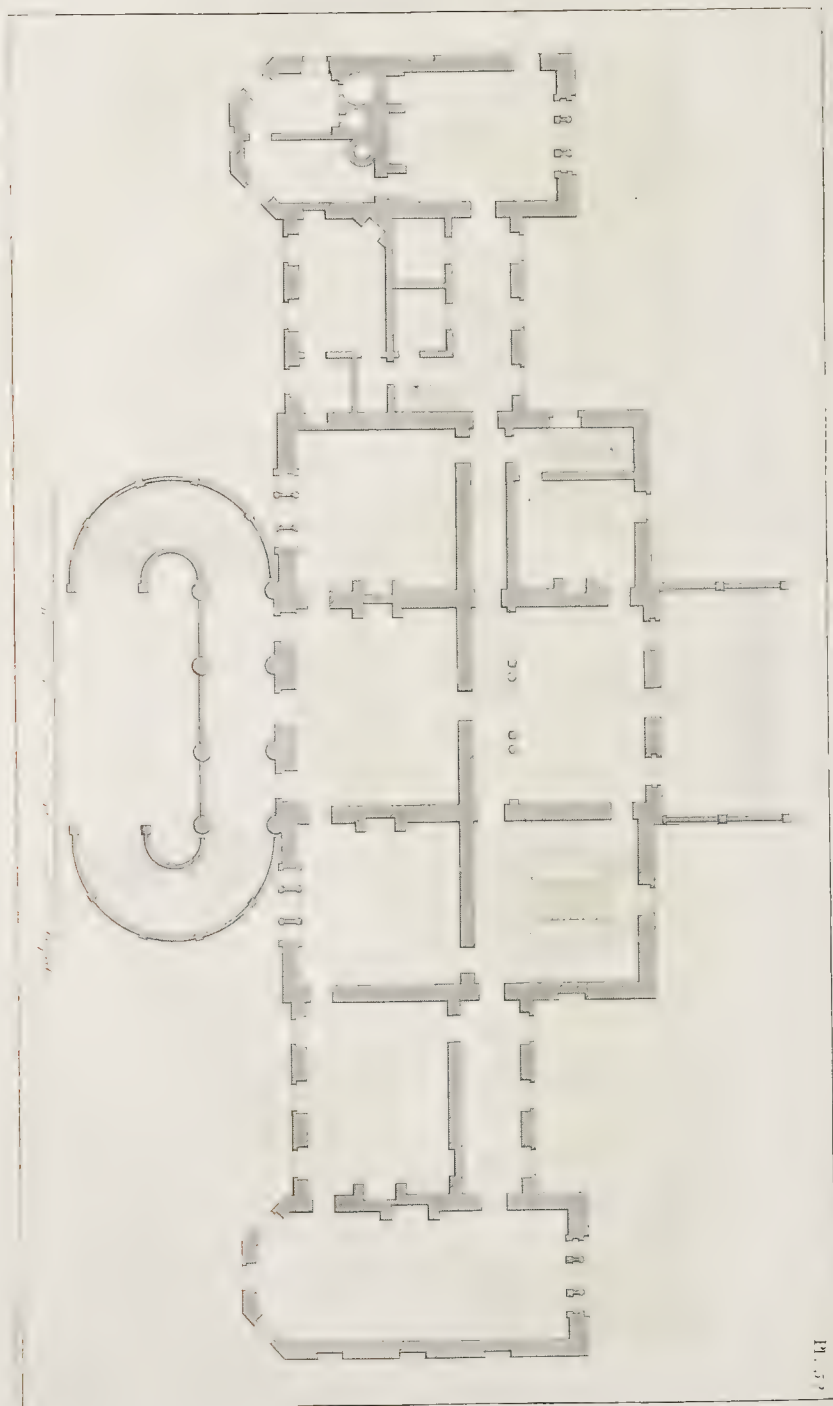
Here then naturally falls in an irregular space, but an architect of genius will easily find a way to form it to the rest. A very plain and familiar method is this: let the window below be terminated at its top by a straight arch in the manner of the others, only with shorter or lower stones; over this let there run a cornice: from the top of the cornice let there be raised a very small segment of a circular arch, and over this another row of rustick, like the stones of straight arches. The top of this must make the bottom of the mezzanine window.

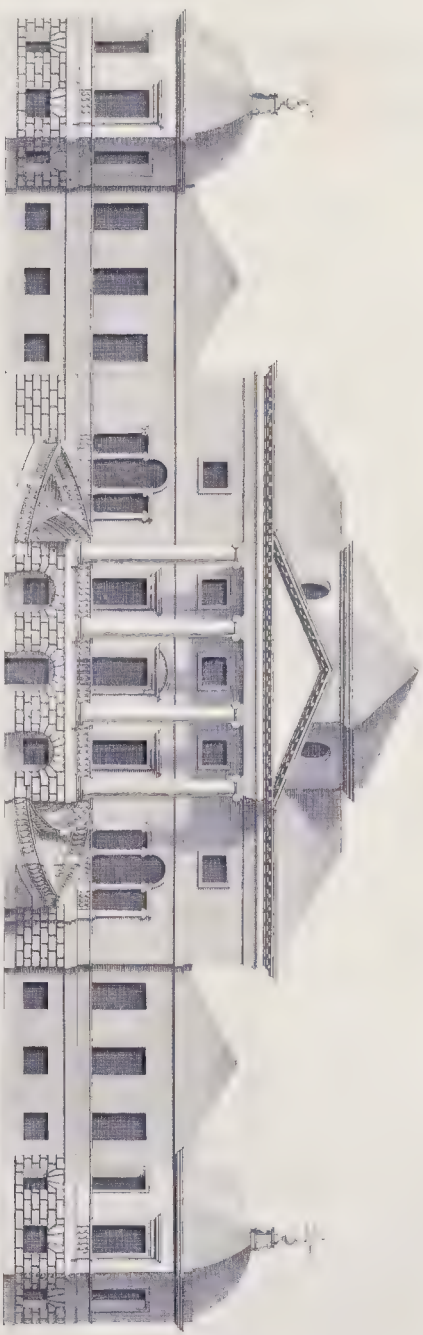
This being repeated with the same measures and perfect regularity on the other side of the house, there will be a very agreeable variation from the continued straight line too common in fronts; and the best proportion that can be will be given to the corner room, and the most proper use made of the space over it in a good and well-constructed mezzanine.

The front of the parlour floor will be thus compleated in a very beautiful manner. The rustick of the wall will rise from a plain wall pedestal high, and diversify'd with the pedestals of the great columns; and it will be terminated by the *Corinthian* cornice

* * * This subject we shall illustrate in a succeeding plate, and here give a plan and elevation of a building designed for the service of the city of London, and that might have done it honour.







17. 18. 19. 20. 21. 22. 23. 24. 25. 26. 27. 28. 29. 30. 31. 32. 33. 34. 35. 36. 37. 38. 39. 40. 41. 42. 43. 44. 45. 46. 47. 48. 49. 50. 51. 52. 53. 54. 55. 56. 57. 58. 59. 60. 61. 62. 63. 64. 65. 66. 67. 68. 69. 70. 71. 72. 73. 74. 75. 76. 77. 78. 79. 80. 81. 82. 83. 84. 85. 86. 87. 88. 89. 90. 91. 92. 93. 94. 95. 96. 97. 98. 99. 100.

nice from the pilasters of the interior order. The bodies of these pilasters and the shafts of the columns running up plain between, will give a pleasing diversity, and the compartments over the windows will crown the disposition. Over this is to be raised the upper story, within the height of the great order of columns, in which there must not be too much decoration.

C H A P. XVIII.

Of raising the second story or first floor apartments of the abovementioned house.

THE cornice of the *Corinthian* entablature, raised upon the pilasters of the interior order, and supported between them, terminates the parlour story in our intended edifice. The shafts of the principal columns continue through this, and are carried so high that the tops of their capitals range with the top of the case of the windows of that story. The proper entablature of the *Composite* order is raised upon these, and this terminates the present story.

This will give a general idea of the construction of the front in this part; but we are to descend to the particulars.

The *Composite* entablature at large, in proportion to the principal columns, is to be carried in a straight line to the extremity of the building each way; and, for uniformity, it must, in these places, have the appearance of a support. In the lower story, the pilasters of the interior order supported their entablature in this place, because they were placed at the angle; but here the much heavier and larger entablature of the great columns must seem to hang in the air, unless some device be found for it. This however, must not be determined till the structure of the wall from the cornice of the *Corinthian* below is determined.

First then, let a balustrade be raised upon this cornice exactly over every window of the story below, that it may stand under the windows severally in this story; it is to be terminated by a pilaster on each side, and the cornice of this pilaster is to be continued along the wall all the way at that height, connecting the whole in a straight even line. At each corner there must be raised another pilaster, and these must answer those of the balustrades under the windows.

This part of the wall of the upper story will be thus very well finished; there will be at each corner a low pilaster: under every window a balustrade like the pilasters, pedestal high, terminated each way by pilasters, and the mouldings of these are to run on the front of the wall.

Thus much being settled, it will be seen that there is but a small height from the top of the low pilasters at the angles, to the hanging entablature continued from the columns. There wants something, as we have observed, that should have the aspect of supporting that cornice, and it is not difficult now to say what it should be; a figure at each corner, placed on the low pedestal, will serve as a *Caryatic*, and rise to the height of the entablature; this will have a very pleasing effect.

Book III. Upon the balustrades are to be raised the windows, which should have ornamented
 cafes, and they should rise to meet the bottom of the architrave continued from the columns.

What we have observed, respecting the disposition of the rooms in the lower story, must hold exactly here also. The rooms in the centre of the house will want all the height they have from the cornice of the *Corinthian* to the cornice of the *Composite* above; but it will not be so with those two rooms which it will now be convenient to make at the corners, with one window to each, for this reason; these windows are, like those of the lower story, to be much lower than the others, and it will be proper to give them a pediment at the top, the point of which shall reach just to the bottom of the entablature; in all respects beside they should resemble the others. Their balustrade at the bottom will shew very distinctly the proportion they bear to the others in breadth, which is to be computed according to their diminution from that standard in height; and thus there will be a regularity in these though unlike the others, and they will have a very good effect in the general aspect of the front.

As the room enlightened by this single window on each side of the present story will, like those below it, be small, it must not have the height that is left for the others. Here therefore is space for another mezzanine; it must be smaller than that below, and its window must be opened in the *Composite* entablature. This will have no bad effect, for a very good proportion will be to make it nearly the height of the architrave and freeze; so that a little shall be left below of the architrave, and a little above of the freeze.

Though there were compartments of stone-work over the principal windows of the lower story, no such will be required here; in that place there was a large vacant space, because only the shaft of the principal columns ran up between them, and the story was terminated by an entablature of an interior order; but, in this case, the columns terminate in the story, and their large and proper entablature rises immediately over the window. This is a sufficient ornament, and nothing but its proper decoration need be considered; thus will the great story be terminated, and it will be very elegant. The *Attic* is to rise from this, and as the columns are here very lofty, and of a large module, the *Attic* should not be too low which they support; it should be proportioned: and as the principal columns are of the most ornamented order, this story, to keep up a uniformity in the whole, should also be decorated.

It will be remembered that we have before declared against all extravagance of ornament for an *Attic* story; therefore what we advise here is not to be so far misunderstood as to lead the builder into excess.

The pilasters of the *Attic* are to be raised, as usual, one over the head of each of the principal columns, and they are to be considerably lofty.

These pilasters of the *Attic* consist of a base, die, and cap; the mouldings and projection of the base are to be continued along the intermediate wall; and in the same manner those of the cap; and if these pilasters project moderately, this gives an air of lightness to the upper part of the structure, and a variety of light and shadow that is very well seen from the ground.

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Between the pilasters are to be placed the windows of the *Attic*, and in this case Chap. they can have no better figure than a perfect square. They must be surrounded with an ornamental case. They are to reach, their case included, from the height of the mouldings of the base, to that of the cap of the *Attic* pilasters, and they should have a projecting part of their own breadth below them, rising from the cornice of the *Composite* order, and terminating at the base of their cases. This answers to the base of the *Attic* pilasters, and gives great uniformity and great beauty to the whole story.

Over every pilaster of the *Attic* is to be placed a figure or other ornament. This depends upon principles explained before, and therefore not needful to be repeated here: and the front being thus terminated will be very great and very elegant, proportioned in all its parts, and forming a great, solid, and elegant whole.

C H A P. XIX.

Of the choice of parts for the COMPOSITE order in fronts of houses.

WE have observed that the directions we have given in general for the choice of parts, and the use of the antique variations in constructing the *Corinthian* order were equally applicable to the *Composite*; this being remembered by the student will save a great deal of needless repetition: yet something remains particularly respecting this order that must not be omitted.

The use of the orders in the fronts of houses is a particular thing; it is to be considered in a very different light from the placing them to support porticos to churches, and on such other great occasions. In those instances they are the principal supports of the edifice. In this case they are in general only ornamental: this makes a vast difference; for there is a lightness and tenderness of parts that may very well be introduced on these occasions, though it would be very improper in the other.

It is a great happiness that we have remains of the *Roman* architecture in which there are variations in this as well as the other orders: these countenance such liberties as a modern builder dares not otherwise take, and it is to the adapting of these in a proper manner that the architect must owe his greatest praise. This has been a thing little considered hitherto; but we hope this work has pointed out the method of doing it to advantage; and that it will be hereafter understood as the true source of reputation to the builder. We have here explained at large one method of using this order in the front of a house; but we have at the same time informed him that it may be also used in many others, even as many ways as the *Corinthian*; and in this we have instanced, and in all the others, regard is to be had to the place, and the use, or apparent use of the columns, in order to determine concerning their parts and decorations.

With respect to a base for this order, the architect has his choice of three. The ancients, who used the *Attic* base in common to all the orders, gave it this among the rest, and they sometimes also used the *Corinthian* base unaltered: of these therefore he has his choice, and to these *Palladio* has added another, altogether distinct from both, and perfectly adapted to the order.

This

Of the construction of the Composite capital when used in the front of houses.

LET the architect who has thus determined what base to give his *Composite* order, next look into those variations of capitals which we have mentioned in the antique remains where this order stands; and take care to chuse such as shall be suited to the place and use of the order, to which considerations he has before appropriated the base. These parts being thus equally proportioned to the place and office of the column, will be also proportioned in the same manner to one another.

The great article of variation he is in this case to regard, is the height of the capital, and this may be his general rule for proportioning it to the edifice; that the lighter the order be made, the more lofty be its capital.

The student will find in *Plate XXVI.* three *Composite* capitals which he may use upon very sufficient authority, and which he may appropriate to the three bases we have named. The whole consideration must determine him; but being determined in the choice, he has either way the sanction of sufficient authority.

If he raise the *Composite* column from the ground, and give it, as in that case we have ordered, the *Attic* base, this being solid, we should advise him to make the whole order wear the appearance of solidity: in this case let the column be plain; and this is the only instance in which we think the shaft of this enriched order should be plain: having thus suited the shaft to the base for an aspect of solidity and firmness, let him take the model of his capital from that of the arch of *Septimius*. This is the lowest of all the *Composite* capitals in the antique, and will therefore best become the order in this state: sixty-eight minutes and a half is but a very small height for a *Composite* capital, but who shall dare to censure it, when it is proportioned to the form and office of the column in the present building, and is supported by the remains of a very noble *Roman* structure.

We shall next consider the right construction of this order when its place and office in the building make it proper to give it a middle condition between its greatest and least appearance of solidity. In this case *Palladio's* base is to be chosen, but not *Palladio's* capital; it may seem singular to separate the parts united by that great and excellent writer, but the reason will appear obvious upon our present plan. It is a nicer disquisition than any have entered on in this respect before; but truth and reason will support it in every step.

Palladio's base, which is in general by much the best for this order, is of a middle degree between the *Attic* and *Corinthian*; therefore if the antique afford us a capital of a middle character in the same respects, that is to be adapted to it: on enquiry in this critical manner we shall find it does. *Palladio's* is the lightest *Composite* capital that can be properly made, that of the arch of *Septimius* is, as we have shewn, the most solid; and, between these two, the *Romans* have left us a very happy medium in the capital of the *Composite* order in the arch of *Titus*.

As this is a capital of middle condition in respect of lightness, it should be adapted to that base which is of the same character, and this is the base of *Palladio*.

In the last place we are to suppose the place and construction of the order require the lightest capital that can be; then we approve perfectly of *Palladio's Composite* capital: but in order to suit every part of construction one article to another, in this case we would direct the architect to use, in the manner of the antients, the *Corinthian* base to the order.

This will serve as a general and invariable rule for the construction of this order, in whatsoever part of an edifice it may be wanted, or under whatsoever form. The admirer of *Palladio* will see that we receive and adopt all the parts of his *Composite* order, though we use them in a different manner. There is no base that so well becomes the *Composite* column as his, but the proper capital is one of a middle degree of lightness: in the same manner it becomes us to say there is no capital superior to his in delicacy; but then being the most delicate it requires the lightest base.

With respect to the shaft, all that remains is to consider its decoration by fluting: as we have mentioned three bases, and three capitals, of different solidity, or appearance of solidity, and directed the architect to adapt them one to another, we are to add that there is a way of working the shaft of the column proper to each. There are three methods of finishing the shaft of any column that perfectly well answer these other distinctions; the making it altogether plain gives it the aspect of most solidity; the fluting it open all the way gives it the lightest aspect, and the middle between these is the fluting it with cablings up to a third of the height.

Thus where the *Attic* base is used, and the capital is that from the arch of *Septimius*, the shaft should be plain; when *Palladio's* base is used, and the capital of *Titus's* arch is placed on it, the shaft should be fluted with cablings; and finally, where *Palladio's* capital and the *Corinthian* base are used the shaft should be fluted, and the flutings all the way vacant.

C H A P. XXI.

Of the general use of the TUSCAN and DORIC order.

WE have given an instance in a preceding chapter of the manner of using the *Doric* order in an under story. This is its principal use, for it is very rarely employed alone. Its place is in the lower story, and its use is in no instance so proper or so happy as in the manner of porticos. The weight and strength of the *Doric* should not be employed but in the real office of supporting some considerable part of the fabric: as to the *Tuscan* it must never be removed from the ground at all.

The principal use of this lowest of all the orders is when there are large weights to be supported; for it is more massy than the *Doric*: indeed it would be natural enough to suppose it the original and first-invented order, nor would there be any thing very foreign to reality in this, however distant in appearance. The *Tuscan* is a very late invention in comparison of the other orders, but it approaches, as we have elsewhere observed, so near to the old *Doric*, that it might, in respect of proportion, be better called by that name than what we raise at present as *Doric*.

With regard to the *Tuscan*, we shall advise the architect to use it rarely, and only in the most gross works; in all others the *Doric* will answer its purpose, and that in a much more elegant manner.

Where

Where he uses the *Tuscan*, let him never endeavour to decorate it, for that is departing from its character; and if decoration be desired the *Doric* is always ready to be used in its place.

For the *Doric* more is to be said: though it is rarely used except upon the ground, yet in massy buildings it might be placed in the upper story, supported by a bold rustick wall, or a very strong arcade.

There would be a great deal of majesty in it thus introduced in a building of a proper kind and character.

It would shew itself more fully to the eye than when in part below its level; and there is no order that will better bear a close inspection, or more please under such a view: for there is none in which the great article of proportion is more perfectly seen.

In this case we shall advise the architect to select the *Attic* base for this order, and to construct it with the most perfect plainness and with the strictest regard to measure.

It is a very common error to break the shaft of this order as it were into parts, in order to introduce some rustick; but this is a false ornament, and the architect formed upon the principles we have delivered in the course of this work, will always avoid it; the order has in itself sufficient beauty without these supposed decorations.

Nothing is required to appear so entire as the shaft of a column; and this is breaking it.

If it were possible to be done, the judicious architect would always wish that the joints of the stones of which a shaft is composed should be made invisible: if nature afforded the means, they would have the shaft cut out of a single piece; for strength is the point required in this part, and all joints are weakenings: when the student thus establishes in his mind what the natural and perfect structure of a column should be, he will see the great absurdity of thus loading the shaft with imagined decorations. If the beauty of this part be, as it certainly is, its fine proportion, this can never be so perfectly distinguished as when it is entirely plain; even flutings break in upon the plain view of it in some degree by breaking the lights; but in these jointed shafts the view is broken and interrupted so often, that all this beauty is altogether lost to the eye of the observer.

If the great art be to conceal the joints in the shaft of a column as much as possible, and that it certainly is, what can be so erroneous as to expose them to the view by giving a different surface to the column between one and another?

When these plain truths are considered as they ought, the architect will not be tempted to fall into this pitiful fault.

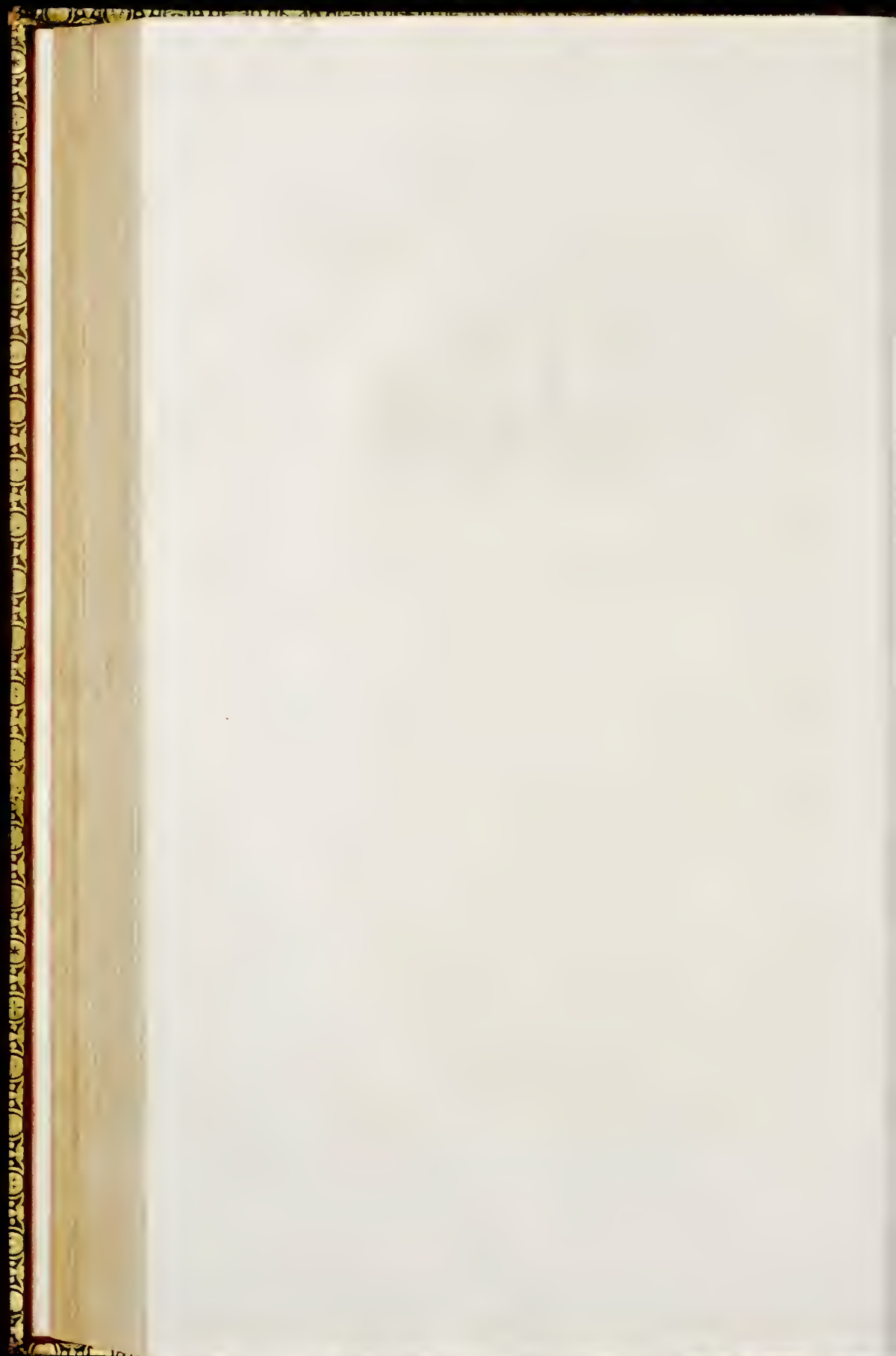
As the proportion of the *Doric* will shew itself very happily when the column is raised a little above the eye, there is also another reason for employing it, on some occasions, in this place; which is, that its great intercolumniation gives opportunity for many beauties between. We see in the basilicas of the antients there were fine arches thrown up between the *Doric* columns, and supported by an inferior set of columns.

Pl: 55.



Pl: 54.





We have before observed that there would occur a difficulty in the management of Chap. 22. this article, whenever it should happen that that the *Doric* was to have an inferior order behind or between its columns on the same story; but we have here an instance how the antients conducted themselves under that circumstance.

The rule is, that the interior order be of the kind next below the principal in elegance; but in this case, the *Tuscan* occupying that place in the series of the orders, a difficulty occurred. The *Tuscan* never was to be raised from the ground, and here it was required by the general rules in a somewhat more advanced situation. There was a necessity of committing one of these two violations of the rule, either to raise the *Tuscan* out of its place; or to employ the same order twice in the same story; and we find they preferred the latter. The interior order supporting these arches was also *Doric*; this the architect knew to be wrong, but there was nothing to be done, but either to comply with the necessity, or do what was more wrong in avoiding it.

The *Doric* is an order the use of which is attended with many difficulties: this is one; and the disposition of its triglyphs and metopes we have before mentioned at large as another. These difficulties have so embarrassed the common race of architects, that the order has been much less used than its natural beauty deserves.

There is no necessity for thus neglecting an order which all allow to be of extreme beauty, and there is nothing more worthy the attention of an architect who has the true spirit of the science in him, than to study means of bringing it more generally into service.

Having thus laid before the student in this science, the methods by which he may most successfully employ the orders in edifices of elegance, and may erect those of less expence without such decorations, we have prepared him for executing any thing that shall be proposed on this head: we shall therefore illustrate what has been thus delivered with a small number of elevations, and their plans of a construction different from the others; and which will need much less explanation.

We will begin with one that has no columns, and lay at once before the gentleman and the builder what may be done with propriety and elegance upon a given piece of ground, without the more expensive decorations.

C H A P. XXII.

The construction of a country seat without columns, or other expensive decorations.

NOTHING can be done properly in these kind of undertakings, without first considering the extent, and then forming in the mind a general idea of the proportion and distribution of the rooms. This is a subject of which we have delivered the theory or principles in a preceding part of the work, and we shall now have an opportunity of illustrating them in the practice.

We will suppose in the present case a gentleman intends to retire from *London*: he is displeased with the houses he sees offered to sale, as he may, with sufficient reason, with most of them; and he determines to build himself a seat.

He is first to chuse a spot for it, weighing carefully, on this occasion, the several cautions we have before given respecting the choice of a situation. Many of these would escape

Book III. the unaccustomed eye, for none can be aware of all the advantages and disadvantages of any particular spot, but those who have been in the way of information, either from their own experience, or that of others.

Setting out with this general knowledge, we shall suppose then the proprietor of the intended edifice to have fixed upon his spot; and he will then naturally call in his builder.

His family is moderate: he intends to build for convenience more than magnificence, but he will have the house handsome, though not pompous. This is the spot, such is the house he intends, and his first demand is, What extent of ground the builder would advise him to cover with it? he will answer, that a house of sixty-five foot in front may answer his purpose. The next consideration is for offices, and here comes in the first principle of elegance and contrivance in the plan. He is not to put the kitchen under the parlours, or the stables in a corner of the yard: a bricklayer could do that, we are speaking of the business of an architect; and we shall shew that these offices are far from being under a necessity to be hid, to be inconvenient, or to be placed improperly. Beauty and use may be consulted together; and, instead of a plain square house of this extent, it will be possible, at a small advance in the charge, to add wings to the centre, and connect them by passages. So that from a plain design, such as the vulgar builder would have proposed, here shall arise, with little more expence, a centre, its wings, and their communication; the whole regular and-uniform.

C H A P. XXIII.

Of the drawing a ground-plan for this edifice.

WE take the given extent of sixty-five foot for the front of the house, or central building; and the first consideration is the depth proper for that front. This has nothing to do with the additional buildings, but is a separate concern, we therefore enquire into it here first.

We have given general rules for the proportions of length and breadth before, and shall upon those principles work in this place. For a moderate family an extent of sixty-five foot will make a house wherein there may be some rooms of elegance and shew: and as something is intended for elegance, as well as for convenience in this edifice, we shall suppose the depth made of the larger kind, and give it the measure of forty foot in the centre, and forty-five to the two ends, which thus running out five foot, will form agreeable rooms by means of their bow windows.

We shall speak of this presently when we come to the distribution of the rooms, and other internal parts; but let our student go on with regularity. We shall lead him by the hand through every article of his profession, in the design of this plain house: he is now considering the face of the building, and we begin with the ground it is to cover.

The body of the house occupies a space of sixty-five foot, by forty or forty-five in depth. The offices come next to be considered: these we have said may be disposed in form of wings; and for these he is to allot a proper extent of ground.

Though these are to be applied to various purposes as we have mentioned, the stables being intended to be made in the one, and the kitchen in the other; yet that need not be seen in their front. They may in that agree with the rest of the building, and they must correspond exactly with one another.

Thus much premised, the student will understand how he is to go to work upon their plan. In the first place, the wings must not join the centre of the building, for that has a crowded and confined look ; it makes a middle and two sides of one continued building, not a centre and two wings of a regular structure ; therefore proportioning their distance to the plan of the central building, let him set off on each side twenty-eight foot, and there begin the out-line of each office.

He is first to consider the fronts of these offices, and there two articles occur ; their extent and their projection. They might be made upon a line with the central building ; but in such strait courses of work there is no grace, no variety, nor elegance : the eye is tired with the same dull formal look, and all has a poor dead aspect.

The offices must be made to project therefore, and the communication to recede ; this will break the strait line : and the two sides corresponding exactly, it will be broken with regularity, and there will be a variety of light and shadow in the highest degree pleasing.

It is determined then, upon these principles, and for these reasons, that the two wings shall project, and the central building fall back between them. This will be again thrown forward by the recesses of the building of communication, and thus the great article of light and shadow will fall gracefully ; for there is as much in this article in the real elevation, as in the drawing on paper.

The projection of the wings may be at the builder's pleasure, but having given him the reason of it in this place, we shall propose such a proportion as will have the happy effect. We shall advise him then to give each wing a projection of thirteen foot from the central building.

He has set off his twenty-eight foot for distance, let him now measure out his thirteen for projection, and then mark the place of the interior angle of each office.

He is now to consider the extent of these ; and as they must be proportioned to that of the principal edifice, we shall advise him to give each a front of thirty-five foot. This is the best measure in proportion to sixty-five ; if they be smaller, the house will look gigantic ; if they be larger, they will on the contrary lessen its aspect.

Their extent in front being settled, their depth comes next under consideration ; and, for a house of this bigness and design, forty-eight foot will be a good measure.

The architect has now the out-line of his central building, and of his offices. They appear very well proportioned, but they stand quite detached. Not only convenience, but beauty, require they should be united one to another ; and the manner of doing this is next to be considered. Here is a space of twenty-eight foot set off for that purpose, and now comes the time to employ it : a strait wall might join the stable to the house ; but something more is required with respect of the kitchen : there must be a covered communication between these, and therefore something more than a wall is needful ; this communication might be made under ground, but this is often subject to inconveniencies, and here it is as well to make it above, as there is a place for it, and proper means.

As there will be some exterior ornament to the house, this passage must not be a plain blank wall ; and as the line of beauty is not strait, it must have a recess. This recess must

Book III.

must be proportioned to the projection of the offices; and there cannot be a better measure than five foot from the angle of the central building. Thus the front of each office which has but thirteen foot real projection, will have an apparent one of eighteen, and the light will be agreeably broken.

Therefore five foot within the angle of the central building let the architect draw his out-line of the communication, and let him allow a passage of eight foot in the clear.

How this shall be decorated we shall shew hereafter, that being a concern properly connected to the elevation: here we have drawn the out-line of the plan.

C H A P. XXIV.

Of the internal division and distribution of the rooms.

THE out-line of the plan is now finished: the architect sees what extent he has to divide for the purposes of use and magnificence; and he is now to proceed to the construction and distribution of the rooms.

The fore front of the house is to project a little forwarder than the two ends; this we shall speak of more particularly when we come to the elevation, it is only named here to give the just proportion of the whole space.

First let him consider the length of sixty-five foot, which by this small projection of the fore front is divided naturally into three parts: let him follow this division within; for it is always best to accommodate the inner distribution of a house to the outer aspect when that can be conveniently done. It may in this case, and he will thus throw the whole front into three rooms: a hall will be proper in the centre, and as this will occupy the whole projecting part, it will be longer than the rest, and its breadth must be proportioned. The thickness of walls being considered, the bigness of these rooms will naturally fall thus: let the hall be set down at twenty-four foot long, for that the construction of the front directs; and the length of each of the other rooms will be sixteen foot.

This being marked, the breadth of the hall should be set down at half its length, that is twelve foot; and the two other rooms will be very well proportioned if their breadth be eleven. In the centre of the fore front will be the door opening immediately into the hall; and thus the whole extent of sixty-five foot will be disposed of in front, to the depth of twelve foot, and the thickness of the walls. Of these two front rooms that on the right hand may very conveniently be made a waiting-room for those persons who are of better rank than to be left in the hall; and that on the left may be a dressing room for the master of the house: the passage into the waiting-room is to be made from the hall, and that into the dressing-room from the bottom of the stair-case. This will be in each respect convenient; as those who wait in the right hand room are naturally led through the hall to it, and the master of the house will have no rooms to go through between the stair-case and dressing-room.

Behind the hall there may run a passage of four foot and a half, leading to the apartments in the hinder part of the house, and to the stair-case; these may conveniently be thus disposed.

Directly

Directly behind the hall and this passage the space may be occupied by a saloon: its length twenty-four foot, as that of the hall, and its breadth, according to the proportions we have before treated of seventeen. This coming behind the hall, occupies the central part of the house backwards; on the left hand of the passage, behind the hall, is to be placed the grand stair-case; and, as this will not fill the extent of depth, a pleasant common parlour may terminate that side of the house. On the other side, or right hand, the passage is to lead to the door of the great dining-parlour, which may occupy this whole part of the space.

This is a method in which the space included within the ground plan of the central or principal building may be commodiously divided; the upper part serving, by a like division, to all the needful purposes: but as tastes may vary, and occasions alter the choice, we shall in the next chapter add a different distribution of the rooms, and disposition of the offices, supposing them still to cover nearly the same extent of ground.

C H A P. XXV.

A second disposition of the building, illustrated by Plate LIV.

WE shall here take nearly the same extent of ground; and design a house of about the same price intended in the former chapters: but we consider a different disposition of parts, and a different distribution of rooms.

We shall propose to the architect to place the offices in wings as before, but we shall propose to him a graceful method of placing them farther from the body of the building. In this case they will be best connected not by a strait line, but a sweep, and there may be, at very small expence, a plain colonnade in this part.

As we propose the wings somewhat farther removed, we shall advise the adding a little to the extent of the front; instead of sixty-five as before, let it be now sixty-eight foot, and let it consist of a fore front a little projecting, and two sides as before: to find the place of the wings let the architect measure twenty-eight foot from each angle of the building; and let this be their distance in extent to the inner angle as well as in projection: thus, in drawing his plan, having set off twenty-eight foot sideways, and twenty-eight foot perpendicularly from that, he will have the place of the nearest inner angle of each of the wings. This being fixed, let him draw the out-line of the plan of each of these upon the following proportion: let the length be forty-eight foot, and the breadth thirty-six.

These out-lines being drawn, he has the contour of a centre and two wings. He is to come to the consideration of their distribution into rooms and divisions; but first he is to design their connection to the building.

As the wings are now at a considerable distance in projection, they could not be connected to the building by a strait line figure without one or more angles; if only one were used, it must be a right angle, and this would be very unpleasing to the eye, and troublesome in the passage. There is the choice therefore of a multangular figure, or of the sweep of a circle, and this latter is vastly to be preferred.

Therefore, the contour of the building and of the offices being drawn, let them be connected together by a sweep of a circle, carried each way from the angle of the central

building, to the inner and upper angle of the wing. This makes the inner line of the passage of communication, the breadth of which should be nine foot; therefore at that distance behind is to be drawn another sweep of a circle corresponding with the first.

The out-line of the connecting passage on each side being thus drawn, the contour of the whole plan is finished. The architect will see the form and figure of his intended structure, and he is then to consider the distribution of the space in each, into proper convenient and proportioned rooms and offices.

C H A P. XXVI.

Of the internal division of the plan.

THE out-line being finished, the architect sees his space, and he is to consider in what manner it may be most conveniently employed. We will lead him first to the compartion of the plan for the central or principal building, that requiring his greatest concern.

We have, in a preceeding chapter, given a convenient and elegant distribution of rooms for a house of this kind; but as various fancies may approve different methods, we shall here give another of an equally correct and useful kind, which we shall illustrate in *Plate LIV*.

Of the door we shall speak in a succeeding chapter, that coming properly under our regard when we treat of the elevation; it is only needful to name it here as the passage must be through it into the several apartments.

This door will be in the centre of the edifice, and it must open into a hall.

We have observed that the central part of the building is to project a little, the two sides falling back; and this projecting part gives the measure of the hall in length, as observed on a former occasion; for this room, including the thickness of the walls, is to occupy this part of the plan. A house like this will admit of a large and noble hall, consistently with the division we are about to propose in this place; and as there will be here no saloon, but a smaller room behind, the hall may be the more spacious and elegant; in this case the given length of the hall will be six-and-twenty foot, and its breadth should be seventeen.

On the right and left of the hall, there will be spaces in the plan equal in front to the two sides in the elevation. That on the left hand may very properly be made a waiting-room; its length will be sixteen foot, for that is a given thing, counting the entire extent, the length of the hall, and the thickness of the walls. As to its depth there comes more into consideration; a large and elegant room is intended behind it, therefore this retrenches it in that particular; and as its use and office are neither grand or very important, there is no need to pinch the other to serve it. Ten foot six will be a very good depth, and will leave room behind for the construction of a handsome dining-room. The passage into this waiting-room should be at the lower end of the hall, and it should have another door opening into the room behind.

The space on the left of the hall is thus disposed and determined, in extent of depth; Chap. 26.
there remains that on the right, and that is the place of the great stair-case. This is a part that must not be cramped on any occasion, neither is there any need it should; for as there will be a great dining-room on the other side, there is not required an apartment of any extent here. The place of the stairs is thus left to be determined according to use, and it will be well to make it about sixteen foot and a fourth, or three inches. This is to be the depth of the space allotted for the stair-case: its extent in length is the same as that on the opposite side.

Thus the whole front of the ground plan is disposed into a hall, a stair-case, and a waiting-room; and there remains an equal extent behind. This it will be proper to divide in the same manner into three rooms, two of which will be large, and the third, though not extensive, yet very useful.

Behind the waiting-room there may be the great dining-room, twenty-two foot four inches long, and sixteen foot broad; behind the hall, that is in the centre of the building backward, there may be a drawing-room twenty-six foot long, and sixteen foot broad; and, behind the stair-case, there will be room for a common parlour of sixteen foot square.

Thus is the ground floor of the principal building divided. The passage of communication on each side may be formed into colonnades in a cheap manner behind; a flight of steps raised with a sweep, like the whole, occupying the centre of each, and leading up to a door; and the covering being no more than a shed supported by the plainest and cheapest columns.

The two wings now remain to be disposed of. That on the right hand may contain the kitchen, and offices belonging to it, and the other the stables.

The front of the right hand wing may be occupied by a kitchen entirely; this will then be thirty foot long, and sixteen and a half wide: or it may be made smaller, by setting off a little room to the right. Twenty-two foot by sixteen will then be a good bigness. The other room will then have the same depth of sixteen foot, and the width to the front may be seven and a half; behind the kitchen may stand the stair-case, for which seven foot and a half will be a proper allowance; and to the right of this may be a scullery twelve foot ten deep from the back front, by seven in breadth. To the left of the stairs may be a servants hall, sixteen foot square; and behind that a larder, twelve foot ten by fourteen foot six.

In the centre of the other wing may be a double coach house; for which there should be allowed the whole breadth of the wing, with ten foot six inches width in the clear, and on each side of this may be the stables.

Of the elevation of the intended building.

THE plan being finished, the architect is to determine in what manner to execute the elevation; and in that there can be no great difficulty, after what has been said concerning the intent in general terms.

It is not to have any rich decorations, neither is it to be altogether plain.

The first principle is, that the principal building and the wings are to be of the same general form and structure; and that there is to run a uniformity through these, and through the connecting sweep.

Let the front wall be raised plain for a foot above the ground, along the whole line of the edifice.

Over this, in the principal building, and in the wings, let there rise a course of rustic to the top of the parlour story. Let the tops of the windows be made in a straight arch, with three key-stones to each; and let the door be decorated with rustic, and have its key-stones; corresponding to these of the windows.

This being executed in the centre and wings, there will be a regular course of work which will give the eye satisfaction.

In the sweeps let the wall be carried up plain to the height of the rustic in the fronts, and if an arched door-way be made where the steps rise, and a square window at equal distance on each side, this will be so far finished.

We are now arrived to the top of the parlour-story, and to an equal height throughout the building. At the top of this is to be laid a plain fascia, which is to run in a regular line throughout the whole; and over this is to be raised an *Ionic* pedestal of three foot in height.

This is also to be carried in a straight line along the whole building, only that it is to be interrupted in seven places by balustrades; five of these are to be under the windows in the front of the centre building, and one over each of the arched doors of the sweep. The windows of the wings are to rest upon the plain pedestal, with no balustrade or other ornament under them.

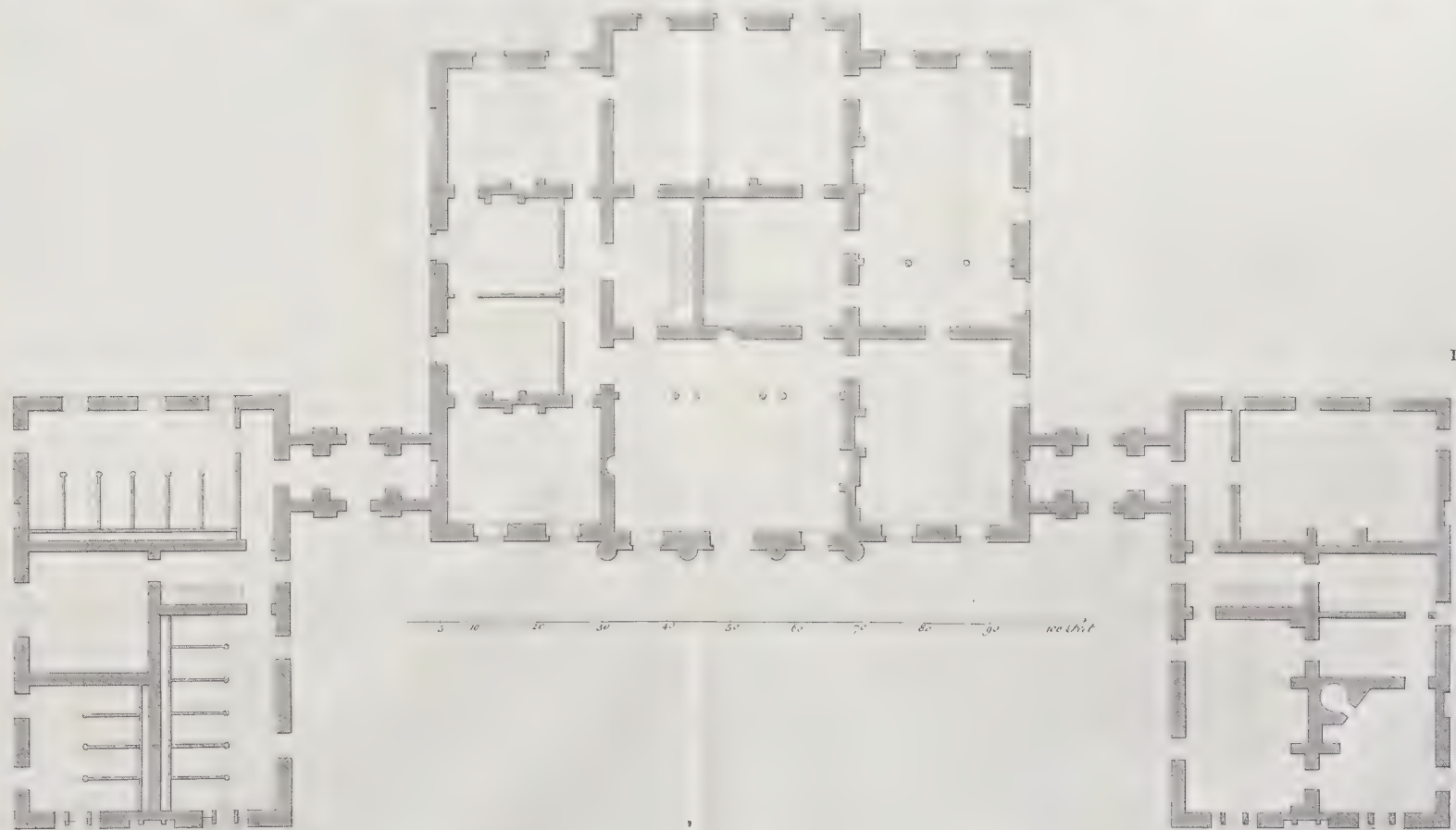
We are thus got as high as the bottoms of the first floor windows; three of these are to be in the fore front, and on each side, and there are also to be three in each of the wings.

Here the architect will see room for a needful and a pleasing variety.

The windows must all be surrounded by their usual and plain ornaments in the main building, and their tops may be varied to have a pleasing effect; the centre window may have a round pediment; those on each side may be terminated flat; and the two in the sides may have pointed or sharp pediments. The windows corresponding to these, in the wings must be entirely plain. The wall being carried up plain between all these, over those in the wings should rise a pediment; and over those in the principal building an *Attic* story; and then the roof and cornice thus finish the building.



Pl. 57.



Pl. 56.



Of a house with IONIC columns on the parlour floor.

IN the preceding number we gave the plan, elevation, and construction, of a house of moderate expence, without the orders; we shall here, in the same manner, illustrate the general rules before laid down concerning the use of columns, by laying down the practice, in the composition of an elegant and useful house; modern in the design, and moderate in the expence.

We shall suppose the architect to begin his scheme, in thought, as he must in practice begin his structure, from the ground; and we shall lead him to the proper first considerations, and thence to the succeeding. The extent of ground to be covered is the first point, and that being settled the distribution of the offices comes next.

These must be in number and extent proportioned to the family, and accordingly they must be designed in a different manner.

There are two places for offices; the under-ground floor, as is the custom in *London*, where room is scarce, because the ground rent is dear; and the wings, which is their common place in the country, where the ground is generally the property of the person who builds, or if not, comes but at a moderate price.

Of these two methods the placing them in the under-ground floor is fittest for smaller families; and the lodging them in the wings for larger. But in this case there must be places of waiting nearer the principal apartments, for those servants whose business it is to be about the person of the master and lady.

These are the two methods; but there may be a third between them which shall answer the purpose of convenience more than either: and this is what we shall propose to the architect in the succeeding plan. In this we shall direct him to lodge a part of the servants at a distance from the house, and a part within it. The upper servants are most wanted about the persons of the master and lady, and these we shall place in a basement story under the parlour floor; which is intended here as the principal apartment. They can be suffered here because they are cleanly and quiet; therefore there is convenience in having them near, and nothing disagreeable. On the other hand, the kitchen is hot, the sculleries are offensive, and the servants hall is noisy; these therefore we shall place in one of the wings. This is the conduct of reason; the house-keeper, the clerk of the kitchen, and other domestics of the like rank, will thus be separated from the rabble of the kitchen; they will be at quiet to discharge their several duties, and they will be ready to attend the master or lady. The others will be placed where they can perform their several offices also unmolested; and we shall yet lay them open to the inspection of the upper servants continually, and place them in readiness to attend the family, by means of a short open passage of communication between the wing in which they are lodged and the body of the house.

Book III.

As we shall propose to lodge in one wing the lower class of servants, the other will conveniently hold the stables; and as the gentleman in the country frequently is fond of horses, and has pleasure in seeing them well managed, the same kind of passage may be opened from the body of the house to that wing as to the other.

Thus the young architect sees what kind of general disposition may be useful in an edifice of this kind, and having first established in his mind this assortment of the parts at large, we shall lead him to the particulars, beginning with his plan.

C H A P. XXIX.

Of the plan.

WE propose this house to consist of one principal story, a pulour floor raised to a proper height above the level of the ground; and therefore the plan is to be of this floor: under it are to come the offices of the upper servants, and above it an *Attic* for bed-chambers. This is the general idea of the building.

We will suppose the extent of front to be ninety-two foot; this is the first point agreed upon with respect to the central or principal building: this being given, he is to consider what depth will be convenient for such a front, for the intended service, and what the proper extent of the wings.

The depth must be proportioned to the intended size and number of the rooms within; and the other article is guided by proportion and convenience: the wings must be of a proper bigness in respect of the house. Their distance must be such, that the outline have a regularity, and look neither scattering nor crowded; and that they may neither be so near as to be offensive to the family, nor so distant as to have the servants out of hearing, or the things too far off for carrying.

Upon these joint considerations of use and proportion, the architect will find the following measure very proper; let him for the depth of the house allow eighty foot: this is a good proportion to the ninety-two in length, and it is a space that will allow a number of very convenient rooms; and admit of a graceful division. This determined, let him draw the out-line of his plan. We have mentioned eighty foot as the best proportion in this case, but he is not to consider himself as tied down to inches, or compelled to draw a strait line every where. On the contrary, it will be more useful in the distribution to give the centre a projection of five foot in the back, and this will also break in upon the tameness of an absolute strait wall in the elevation. A small projection may, in the same manner, be gracefully allowed in the fore front, and thus the measure which, in a general computation, we have given at eighty foot, may be a little more than that in the centre, and a little less in the sides.

The out-line of this being laid down, the next consideration is the length of the passage leading to the wings; for this let him set off on each side two-and-twenty foot, or a little less; and let him allow eight foot and a half for the clear. This gives the place

of the out-line of the back, and as to that of the front it should recede about five foot Chap. 29.
from the line of the building.

The plan of the house and of the communication are now laid down, and consequently the place of the inner line of the wings. These come now under consideration: we have delivered their theory, and we come to the practice of it.

With respect to their depth, it is to be adapted solely to convenience, for that not being seen, is under no limitations as to proportion; but in regard to the extent in front, it is otherwise; that is to be a regular and determinate thing. In a house of this front, and in a distance such as is here laid down, the wings ought to be less than half the central building in extent; the proper diminution from half is about a fifth of the half, or a tenth of the extent of the whole central building.

This is a calculation founded upon the unerring and invariable rules of proportion; and is practised by many who never have troubled themselves about the theory or reason of it. The measure thus prescribed is that each wing extend about forty foot in front; this will please the most judicious and the most common eye together; and any thing greatly more or greatly less will always disgust those who have not studied proportion, and will shock those who have.

There remain two things to be yet determined respecting the wings; these are their depth and their projection.

In proportion to such a depth as we have allowed the principal building, these wings for the offices ought to have between sixty and seventy foot; about sixty-four within the clear of the walls will contain a proper number of offices, and those of a proportioned size, for such a family as are likely to inhabit a house of this bigness.

This depth being fixed upon, the out-line is to be drawn as soon as the projection is determined, and this is a point of great nicety. Light and shadow are to be consulted, and their effects ought to be known: it is not a wonder that some of the finest architects the world ever produced have risen from among the painters. The arts are naturally allied, and he will always, upon other equal considerations, be best able to plan the out-line of a building, who could best dispose the parts on canvass.

Of the many projections that might be chose on this occasion, none will so perfectly answer as that of forty-five foot from the line of the building. This is a little less than half the extent of the front of the principal edifice, and a little more than half the full extent in front of the buildings themselves. This answers every law of geometrical and perspective proportion, and in this disposition the whole will have a graceful effect.

The architect is upon these measures to draw the out-line of his offices; that of the building itself; those of the passages, were marked before, and thus the contour is finished.

Of the compartition, or inner divifion, of the plan of the houfe.

THE architect is to remember that the principal floor of the houfe we propofe is to be a parlour ftory, raifed to a due height above the level of the ground; what that height is to be comes under confideration when we treat of the elevation, here we fpeak only of the divifion of the plan. We have reminded him this is the principal floor, therefore it is the plan of this he is to draw; the offices below and the bed-chambers above may be formed by an eafy divifion afterwards.

A flight of fteps leads to the door, which is in the centre of the houfe, and this opens into the hall. There is fpace in this extent to make that a fpacious room, and let it be fuch: it will naturally occupy the fore front of the houfe, comprehending the door and two windows, and it will be proper to allow it five-and-thirty foot and a half in length, and in depth thirty. To the left of this hall may be a common dining-parlour, and to the right an anti-room. The parlour may be three-and-twenty foot fix by eighteen, which will be a commodious bignefs, and well lighted by the fingle window allotted to it; and the room on the other fide may be larger: its breadth is limited by the hall, and muft be the fame with that of the other, twenty-three foot fix, but inftead of eighteen, this may have eight-and-twenty foot in depth.

Thus the extent in front is conveniently difpofed of.

Behind the hall is to be the great ftair-cafe; and at the back of that a faloon, occupying the central part of the houfe behind, as the hall does in front.

The breadth of the hall being thirty-five foot fix, this is not all needed to a ftair-cafe; nor need the faloon have the full depth of the hall, though it have the fame breadth; thirty-five foot fix is its meafure this way; and a very proper depth for it will be twenty-three foot eight.

The central part of the houfe being all thus difpofed of, there remain the back part of the two fides; and this being a deeper extent on the left, behind the common dining-parlour, than it is on the right hand behind the anti-room, is to be differently difpofed of.

Behind the anti-room there is a depth of forty foot, and its breadth being the fame with that of the anti-room is three-and-twenty foot fix: this, without, any divifion, gives a very noble room; it may be properly the capital apartment of the houfe, and may be called the great dining-room.

There remains only the other fide backward to be difpofed of; this is not of a fhape to be thrown into one room, nor is one of that kind needed.

Behind

Behind the common dining-parlour may be two waiting-rooms, each of them seven-^{Chap. 31.} teen foot three by fifteen foot; and this will leave a space of seventeen foot deep, by the same measure twenty-three foot six. This may conveniently be made into a dressing-room for the master of the family; and thus the distribution of the principal floor will be finished elegantly and conveniently.

The allowed breadth of the two waiting-rooms on this side, leaves a space for a passage between them and the stair-case: the master of the house passes through this to his dressing-room, and through the same passage into the common dining-parlour. The two waiting-rooms answer their intent very properly, the one being before the dressing-room, the other before the dining-parlour; the places where they are most needed and most convenient.

C H A P. XXXI.

Of the compartition of the wings.

WE have observed in general that one of the wings is to be allotted to the business and reception of the inferior servants, and the other to the use of the equipage. These therefore require a very different disposition and distribution of parts within. We will suppose the left wing intended for the stable and coach-house; and the right to the other purposes: we have given the out-line; the architect sees its extent; and he is to dispose it to the best advantage.

Two principal rooms there are to be in this place, a kitchen and a servants hall; these must therefore be first considered that they may not be cramped, and afterwards the best use that can is to be made of the remainder. We shall advise him to place the kitchen in front of the wing, and to let it occupy half the extent of that part with a large depth; the measure of the kitchen will thus be fixed at eighteen foot, the thickness of the walls reducing the half to this measure in the clear; and it will be very proper to give it eleven foot more in depth, making it that way nine-and-twenty: this will be a very well proportioned kitchen. To the right of this the whole breadth and an equal depth is to be allowed for the offices belonging to the kitchen: a scullery is to occupy the other half of the extent, and its depth is to be seventeen foot six. This, allowing for the thickness of the walls, will be nineteen foot, and its depth may be nineteen foot six inches. This will leave a space of the same depth, and of nine foot breadth behind it, and that will make a larder.

Thus the whole front extent of the right wing is divided, and twenty-nine foot of its depth; the next consideration is for a servants hall, and there is room enough in the remaining depth of the wing to make that of sufficient dimensions.

There will now remain a complete breadth of the wing behind, with the clear depth of twenty foot; a passage is first to be allowed of about seven foot in the clear, and of the whole twenty in length, and behind this is to be the servants hall, for which we see twenty-nine foot six is allowed in the clear.

Book III. Thus the right wing will be disposed conveniently: the passage of communication leading from the house will open into this last-named passage of the wing; from thence there should be a door strait in front into the servants hall for the convenience of their attending readily and easily; and the passage continued down the wing in its length of twenty foot leads to the kitchen and the stair-case, and by proper communications to the larders. This is very needful, that the house-keeper, house-steward, or clerk of the kitchen may go at any time to the larders without passing through the kitchen.

We are now to cast our eye to the other wing, the construction of which will be very easy. Its extent being the same with that of the right, it will allow, beside the coach-house, stabling for a considerable number of horses.

The principal stable for the better sort of horses may most conveniently be placed in the back of the wing, because it is into that part the master most readily comes from the house; the projection of the wing throwing the open communication into this part. The construction of this may be nearly the same with that of the back of the other wing. The communication passage must open into a passage in this place, whose breadth need not be more than five foot three, and its length may be twenty foot, proportioned to the stable. This allows a space of twenty foot deep, and thirty-one foot nine in the clear, which is to be the principal stable. At the end of this twenty foot passage should be the stair-case, a moderate allowance for which will be eight foot in breadth, and seventeen foot six in depth. Behind this may stand the coach-house, eighteen foot square; and the rest of the space is to be divided into two stables. The coach-house intruding upon one of these allows it only nineteen foot six in length, but the other, being terminated only by the stair-case, may be in length twenty-nine foot six. This will be a convenient disposition of the ground plan of each wing, and over both there will be room for bed-chambers for the servants.

Of the elevation.

HAVING thus distributed the plan into apartments, the architect comes to the elevation: in this, as we propose the assistance of columns, there may be a great deal of elegance; and as those columns are *Ionic*, he must remember that harmony requires that the ornaments be neither lavishly employed, nor wholly omitted.

The height at which he should place the principal floor above the level of the ground is about eight foot. The first consideration is the ascent from the ground: moderation is an excellent guide on all occasions, and it is what should be consulted here; let the architect consider there is only to be an *Attic* over the parlour floor, and he will find that a guide; let him also consider the due height of the windows, and that will give him the elevation of this part; for both these being made in good proportion, they will give the height of one another, which in such an edifice should be eight foot.

Here is then first to be raised a wall of eight foot, in which are to be seen the tops of the windows of the basement story: let this wall be quite plain, and its construction in other respects will be directed by the steps.

The door being placed in the centre of the house, the ascent to it must be by a flight of steps: these should be so broad as to occupy the whole centre of the front, and they should be terminated on each side by a pedestal.

This is to be *Ionic*, and it gives the construction of the upper and lower part of the wall; a plinth is to run in a continued line from its base, and its mouldings are to be continued in the same manner from the top; these give the finishing to the basement and lay the foundation for the floor of the principal or parlour story.

In the centre of this exactly must be placed the door, and on each side of this there is to be one window in the middle, and two windows are to be in each of the sides; those on the left enlighten the common dining-parlour, and those on the right enlighten the anti-room; the two next the door being in the hall.

To the base of these windows is to be carried a plain wall three foot, terminated by mouldings, and on these the windows are to be raised.

We have now risen to the place of the columns, and are to consider their position and construction. This is a very essential point, because the least error will be seen and censured. The place of these columns is upon the level of the parlour floor, and, for a house of this form and dimension, they will, in this position, require only a three quarter projection.

Book III. They should rest upon the floor or wall at eight foot height, and their entablature must support the roof.

There will, in this construction, be a very agreeable deception to the eye, for tho' they really stand plain on the parlour floor, they will seem to be elegantly elevated. The pedestals which flank the steps will support the two outer ones at their back, where they join the building; and those on the steps will seem also supported by them.

As to the construction of the order, the rules we have before given, being brought to practice, establish it thus: the base must be *Attic*, the shaft must be plain, the capital must be modern, and the entablature must have the swelling or pulvinated freeze. This way the columns will have an air of composure and magnificence, and they will be in every respect proportioned to the building.

As to the windows in this edifice, they should have their plain and usual ornaments. Those on each side of the door may have pointed pediments, and those in the sides be terminated with a straight cornice; the door may have a circular pediment which will in the whole give a pleasing variety.

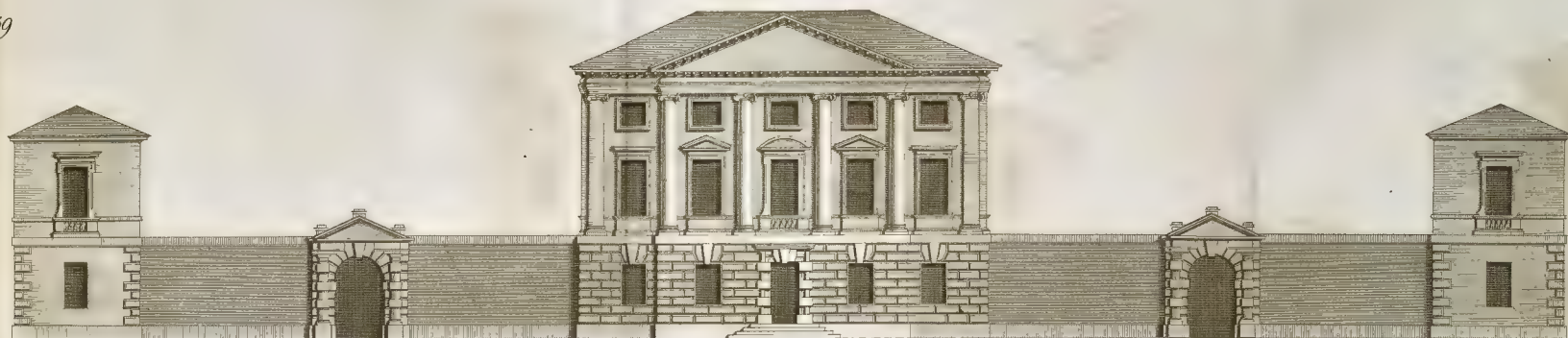
The *Attic* windows are to have plain ornaments in the usual way; and the *Ionic* cornice crowning the whole, will give a degree of elegance perfectly proportioned to the nature of the building.

Thus the front of the house will be finished to the height of the order: and over this is to be raised a pediment, which it will seem the office of the columns to support.

We come now to the wings, and their elevation is to be plain; semicircular windows for the lower rooms are most proper, and a plain *Attic* for the rooms above; over these is to be carried a low pediment of the extent of the building, and in that another semicircular window will be useful to light upper rooms; and it will be also ornamental.

Last of all we are to give the elevation of the passage, and that a few words will describe; it is to be carried plain the height of the parlour floor, and its door in the centre is to be decorated with a dome.

Pl:59

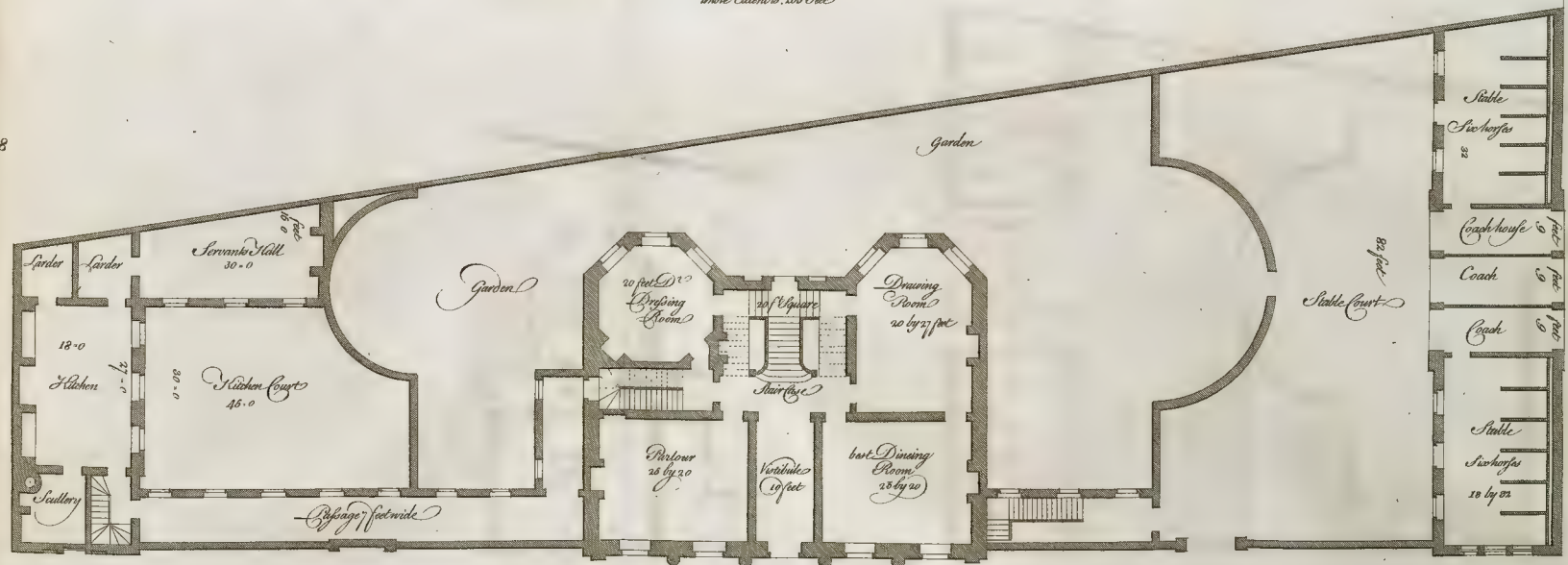


22-0

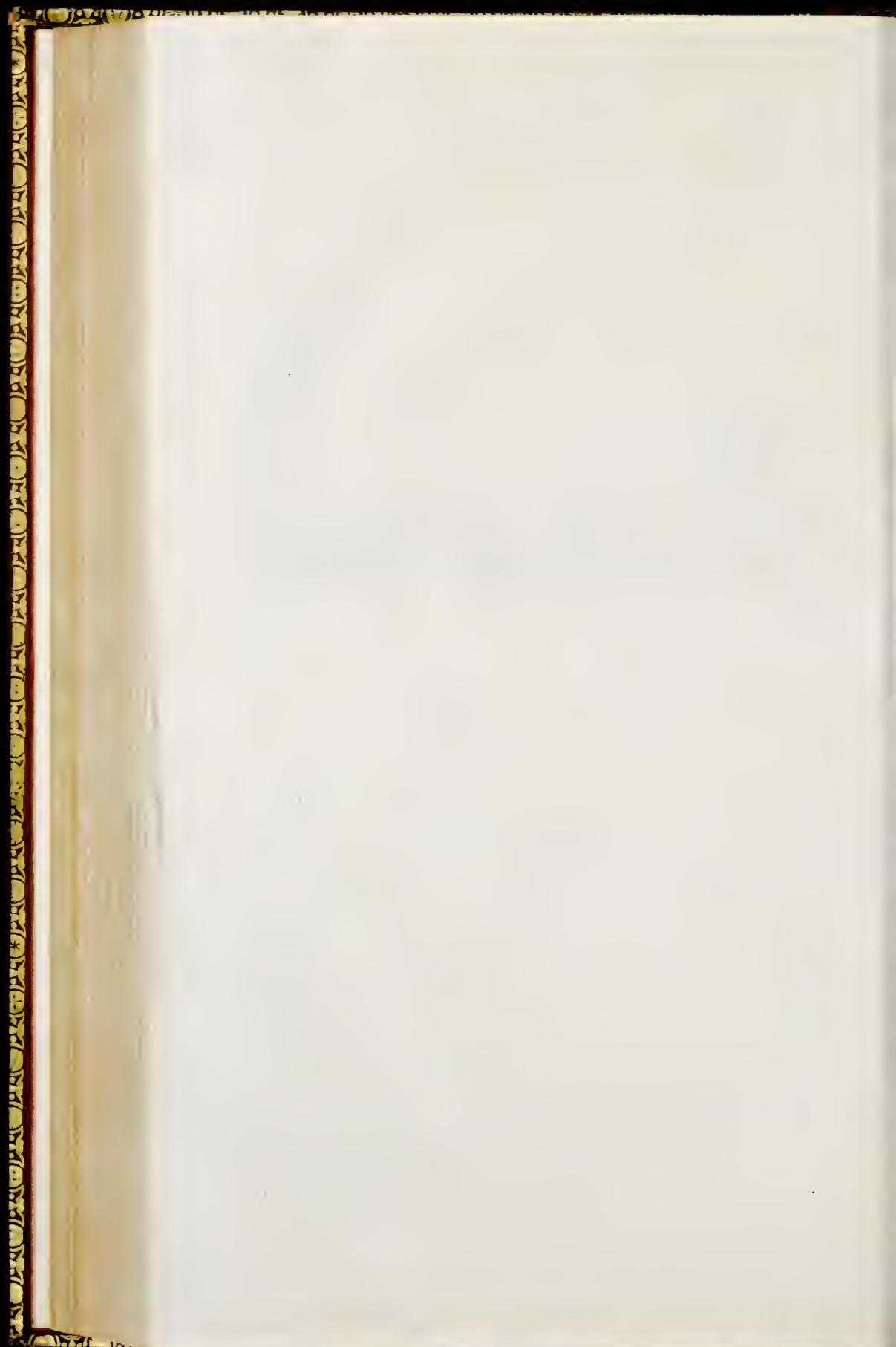
62 feet

whole extent is 268 feet

Pl:58



H. Roberts del.



The construction of a house with a single row of IONIC columns over the parlour story.

WE have given in the last instance the method of using the *Ionic* in the plainest manner; we here advance to a building of more elegance and greater decoration. This is naturally required where the order is more raised; and every thing is to be accommodated to that first consideration.

Our present structure will, like the last, consist of a central edifice and wings, united by a passage of communication: but the wings will be more decorated in proportion to the rest of the edifice. They will also be necessarily thrown in this richer edifice to a greater distance. We shall convey here a general idea of such a construction, that the young architect may comprehend the reason of the several directions to be given respecting the particular parts; and he will thence understand in the structure of each not only the form but the meaning.

The parlour story in this case being intended for rooms of some consequence, is to be better lighted and better decorated than the basement in the other; which being intended only for servants was proper to be plain.

These decorations in the parlour story of the present edifice must have a conformity with one another, and all must be made in proportion, and in relation, to the upper story which is to be supported on it. A well-understood rustick will be best on all these considerations; and, in the upper floor, the decorations must be proportioned to the elevation, and to the general design.

We shall explain to the student, in the several particulars, what we have only delivered here as general information; and shall give in the succeeding plates LVIII, LIX, the plan and elevation of such a house, as accommodated to a particular piece of ground. This edifice was designed for *London*, in one of the extreme streets. The ground allotted for it was considerably deeper at one end than the other, and its situation was in a street which it terminated at the corner. This being premised, the reason of the particular form of the out-line in the plan will be understood, and the young architect will see in what manner, on like occasions, a right knowledge of his profession will palliate natural irregularities, or in some cases turn defects to advantages.

The ground he will see in this instance is regular in front, but unequal in depth. There is however in the centre abundantly depth enough for the house, and for a due space behind it; and in the narrowest angle there is room enough for a kitchen and its needful adjoining offices. This is sufficient for use with discretion in the management; and he will see how that discretion is to be employed.

Book III. He understands the situation, and he has a piece of ground which extends two hundred and sixty-five foot in front in a strait line : its depth at the narrowest part, where we suppose it to join other houses, is fifty feet ; and in this, with the advantage of its great length, there is compass for the kitchen and its offices. From this point it runs in an oblique line, widening all the way to the other end, where it forms the corner of the street, and is there ninety foot.

This he is to understand as a great advantage ; as is also the corner situation : here is room for a fine line of stables, and for a coach-house open at both ends in the centre. This is a great advantage wherever it can be had ; and he is to take care that he do not neglect it.

We will suppose our young architect employed to erect such an edifice as we have been naming upon this piece of ground ; and shall consider it in every part as it rises under this imagination, from the distribution of the ground to finishing the building.

C H A P. XXXIV.

Of the out-line of the plan.

THE first thing the builder sees is his extent in front, which is very considerable ; he has two hundred sixty-five foot to cover with the complete front line of a building ; and he is first to determine what should be the extent in front of the principal edifice. This can no way be determined but by considering the intended decorations of the whole : and, upon the present plan of an elevated order, and rustick lower story, he will find that something less than a fourth of the space is to be occupied by the principal building : let him therefore draw the front line of this part, sixty-eight foot in length. He has then to consider the extent in front of the wings, and the wall of connection ; it will add greatly to the elegance of a front of this kind to make the extent of the wall considerable, and the wings small in the front : they may run out in depth to answer all the purposes of convenience, for that is not seen ; and in this manner they may hold with perfect ease the kitchen and the stables, while to the eye they appear a kind of pavilions.

The architect will see we are here giving him the plan of an edifice in all things different from the former ; but so it should be upon this design. The place of the order, and conduct of the central building are very different from that ; and therefore all should be different, in order that all may be correspondent with this principal building.

There the wings were large, and projected considerably beyond the body of the building ; but, on the contrary, here as they are to appear small, they will not have occasion for that great advance forward. In a structure of this kind, the nearer the principal part and the offices come to a parallel line the better, provided it be not absolutely such. There is a deadness in a flat strait line always disagreeable, this therefore must be avoided, but as to the rest the nearer a parallel the better.

*

These

These are the principles on which the architect is to act in a structure of this kind and character; and these we shall reduce to practice in the present plan. Chap. I.

Let him set off seventy-four foot on each side for the length of the communication, and at that distance mark the inner angle of each of the wings.

This may be placed on a level with the front line of the house, for the making the line of communication recede a little will give enough break in the front of the whole.

Let him place this wall two foot backward than the front of the building, and then begin the line for the front of each wing just upon a level with the body of the house; and let him give each the extent of twenty-two foot. This will be an elegant proportion: there will be a fine central edifice, a couple of well-fashioned wings, and a wall of communication of a fine length, which being decorated in the centre with a gate-way on each side, adapted to the construction of the front, will make an elegant appearance.

The architect will remember that in this place the nature of the ground terminates the back of the two wings as we have laid them down before, and so forms the complete out-line of the whole.

There remains therefore only to determine the depth, and lay down the out-line of the principal building, and he may then proceed to the distribution or compartition of the space included.

For a house of this kind which is to have two stories and an *Attic*, the best depth proportioned to the front line is forty-six foot in the centre, where there are to be no principal rooms below; and in the two ends fifty-three. These may be thrown into angulated forms, and in this manner each gives a very fine room, while the centre backwards contains the stair-case: and thus the whole out-line will be agreeable to the eye, and very well contrived for use.

The out-line of the principal building and of the wings being thus laid down, there will be seen a great deal of unoccupied ground within the general scheme of the piece; and this will give great advantages. Many ways of disposing it may be taken: but we shall lay before the student one by which he will find it is capable of great use.

Of the distribution of the ground within the out-line of this plan.

THE house standing in the centre, and the offices having no great breadth at the two extremes, there is on each side a large space. It is of equal length either way, but of much greater compass to the left than to the right, because of the oblique line by which it is terminated behind. We shall shew how the most proper use may be made of this, and the architect will not be at a loss to contrive more advantageously, when he has equal extent each way. The space about the house may be most commodiously thrown into a garden. The measure of this from the house must be each way the same, but the whole extent will be very different; because of the irregularity of depth in the ground; the principal part of the garden will lie to the left, but the great art will be to conceal as much as possible the irregularity of the two sides.

It is a principle in the disposition of gardens that, of all figures, the circular shew their extent the most uncertainly to the eye: the reason of this is the falling of the shadow, which is used in all round bodies to deceive the eye; and this varies every moment, as we change place in walking.

Upon this principle, let the ground for a garden be designed in a couple of sweeps: but there is yet more to be observed. As the eye is to be deceived, the care must be to make these sweeps only partial; if they took in the whole each way, the eye must perceive their great disparity at once: therefore let a strait line begin the contour of each from the passage of communication between the house and the wings. Let this be drawn at about eight-and-twenty foot from the out-line of the building, and continued as many foot from the front wall on the right; and about three foot less on the other side. From this point let the sweep begin on each side, and let its diameter be fifteen foot on the right hand side where the ground is narrowest, and one third more on the other, that is twenty foot.

This sweep on the right hand will reach to the wall, making the back out-line, but in the other it will be terminated by a strait wall of about fourteen foot in length: This is the result of the encrease in breadth in the ground.

Thus will there be formed a garden of an agreeable though not of a regular figure; and there will remain on each side, without its wall, or between that and the wings, a considerable piece of ground; this will in each place be very useful. A servants hall may be placed in it on the right, the extent of the ground plan in that wing not admitting it in the building; and the rest of the space, which, according to this construction, will be an area of forty-five foot by thirty, will be very useful as a kitchen court. As to the space on the other side, that may be left altogether free, and it will be a very fine stable-court, continued to a good depth before all the stables, and giving the coach room to turn.

C H A P. XXXVI.

Of the compartition of the plan.

THE principal building we see is thus placed in a garden ; into which some of the best rooms may very properly look : there is extent both here and to the front to afford very good ones, and we shall propose the following distribution of the plan.

Let a flight of plain steps lead to the front door, and let this open, not into a hall, because the extent of that would intrench too much upon the adjoining rooms ; but into a handsome vestibule ; we propose in this edifice a noble stair-case, occupying, as observed before, the central part of the back front : therefore this vestibule will lead to it. Let its breadth be ten foot in the clear, and let it run twenty foot into the house ; behind this let the stair-case be placed, and let it take up twenty foot square, going to the back of the building.

The centre of the house being thus disposed of, there will remain its two sides, each of which, according to this distribution, will afford place for two handsome rooms ; those in the front gaining breadth by the vestibule, occupying the place of a hall : and those behind being of a fine length.

On the right of the vestibule let there be a parlour twenty-five foot by twenty ; and behind this may be a passage from the house into the communication passage to the kitchen wing. There may very well be allowed for this purpose seven foot in the clear, and this will leave behind twenty foot for a dressing-room ; this will be very convenient and agreeable : it is at the bottom of the stair-case, and it opens to the garden.

On the other side of the house there should be only two rooms upon this floor ; one to the front of exactly the same dimensions with that on the other side the vestibule, and the other behind it ; this latter will be allowed twenty-seven foot by twenty, and may, from its form be made a very elegant room. That to the front should be the best dining-room, and this the drawing-room.

The passage opening between the parlour and dressing-room, on the right hand of the house, is to be continued to that forming the communication, and should be seven foot wide. This may open into a kind of plain vestibule and stair-case, behind which may be placed a scullery ; and to the left it must open into the kitchen. This, as it is the principal office in this wing, should occupy its greatest part ; it must have the whole breadth of the wing, which will very well allow it eighteen foot in the clear ; and its depth may be twenty-seven foot. This allows fourteen foot depth for the vestibule, stair-case, and scullery ; and the irregular space behind it, terminated by the oblique back wall, may make a couple of larders.

Book III.

There wants to this wing a servants hall; and we have mentioned how it is to be gained. It is to be carried along the back wall, and to cover a part of the space between the wing and that side of the garden; it should be of the depth of the part set off for the larders, and should be carried in a strait line till it touch the out-line of the sweep of the garden. It may thus be thirty foot in length, and its breadth, which must be irregular because of the oblique line of the wall, may be in general terms called fifteen foot.

This whole wing is thus disposed; and much less care will serve for the other.

Let twenty foot depth along the whole wall be set out for the building, and all the rest between that and the garden be left vacant for a stable court.

In the centre of this there may be a coach-house, containing stands for three equipages, and on each side a six-horse stable; these will be in the clear eighteen foot by thirty-two in length, and the coach-house may occupy the rest.

We have named the convenience and advantage there is in having a coach-house that is open through; this cannot be done to the full effect, except where there is the benefit of a corner situation, as this house has: but this way it will be easy. We have mentioned a couple of gateways in the wall of communication between the body of the house and the wings; these, though both of the same form, will differ in this, that although there be no occasion for opening a passage through that between the house and kitchen, this on the left hand between the stables and the house being opened, will give a way into the stable court, and through it to the coach-house.

Thus when the master of the house has been set down at his door, the coach goes through the gate in the communication wall into the stable court, and through that is drawn into the coach-house, the horses being taken off on the other side, and brought round to the stable. There it stands ready for the horses to be put to when he goes out again, and is brought round to the door of the house. This saves the trouble and damage of backing into a coach-house in the common way, which is attended with frequent damage to the equipage, and often beats down the corners, or batters other parts of the coach-house.

Of the elevation.

THE plan of this edifice will now be perfectly understood, and we may lead the architect to the elevation. This may be made very elegant, for there is space and scope for it; and it must be made correspondent to the main design of decorating the principal story with the order.

We have given the principles for this in a preceeding part of the work, and the student is expected to retain them in his mind; it would be tedious to recapitulate on every instance what is equally the rule in all of the like kind: but it will be the plainest road to the science to illustrate with real designs and accurate engravings, the general truths which have been delivered there.

As there is to be an order employed in an upper story, the lower should be proportioned both in respect of solidity and convenience.

Its solidity will be shewn in the raising the wall of a due strength for supporting the columns, and its convenience in the height and disposition of the rooms.

As there is to be an upper story of an elegant kind, this lower floor should not be elevated as in those edifices where it is the principal part. There must be no high flight of steps to rise to it, nor should there be any basement story under it.

Its height should be just so much above the level of the ground as to set it out of the reach of damps, and the ascent to the door should be by a plain but well wrought set of steps.

Here will be a proper contrast to the parts above, for if there were pedestals and the like ornaments employed in this instance, they would distract and confuse the eye. The proper distinction of parts is what shews both to the utmost advantage.

Thus much being determined as to the form, the next thought is for the construction. Now the order employed above is to be considered, because that is to be supported; the architect must here remember the great rule of proportioning the supports to the weight. The *Ionic* is a weighty order, therefore let the wall which carries it be rustick: it is to be raised over the parlour story, therefore the wall of that story is to be of that structure.

The columns are not in this disposition to stand quite detached; the plan shews we mean them to be three quarters out of the wall, and this in some degree lightens their weight: therefore though the lower part of the front must be rustick to support them as *Ionic*, it need not be the heaviest kind of rustick, because this is but a three quarter weight proportioned to the absolute consideration of the column.

The reader will see, in this explanation of the principles, the reason of that rustick we have given in this part.

Upon this parlour story thus raised is to stand the order. The construction of this is to be solid, because it supports the cornice; and it would be wrong in principle to lighten it, because it is not free from the wall. For this reason, the *Ionic* should be raised, as in the former instance, without a pedestal, with the *Attic* base, and with the modern capital.

This

Book III. This order is to decorate the middle part of the front : in the preceeding design, the whole being of a plainer nature, nothing was added for the sides ; but here we come to the elevation of a structure in all respects more elegant, therefore there will require some conformity to that principle in all the parts.

The reader will on this occasion recollect what we have said of pilasters in treating particularly on that subject, and he must reduce it to practice here ; the continuation of the order must be by means of these : and the elevation shews what we have there laid down as a rule for laying the entablature over them, when it is upon columns at the same time.

The construction of the front of the principal building being thus understood, we are to consider the wings ; but to go regularly to them, we must first speak of the walls which join them to the edifice.

Here is a very considerable length of building, which, if left plain, would be of a dead aspect ; but if properly ornamented will have an elegant effect. This is the alternative of the architect in innumerable other instances ; he has his choice of making that very ornamental which would naturally be unpleasing, and he is to take the utmost care to employ his pains upon it.

The proper decoration of this kind of wall is a gate in its centre. We have observed one will be useful on the left hand, and that another must answer it on the right for shew.

These must be large, because otherwise they would have the aspect only of holes cut for convenience, without regard to uniformity in the edifice ; and they must be decorated that they may answer the rest.

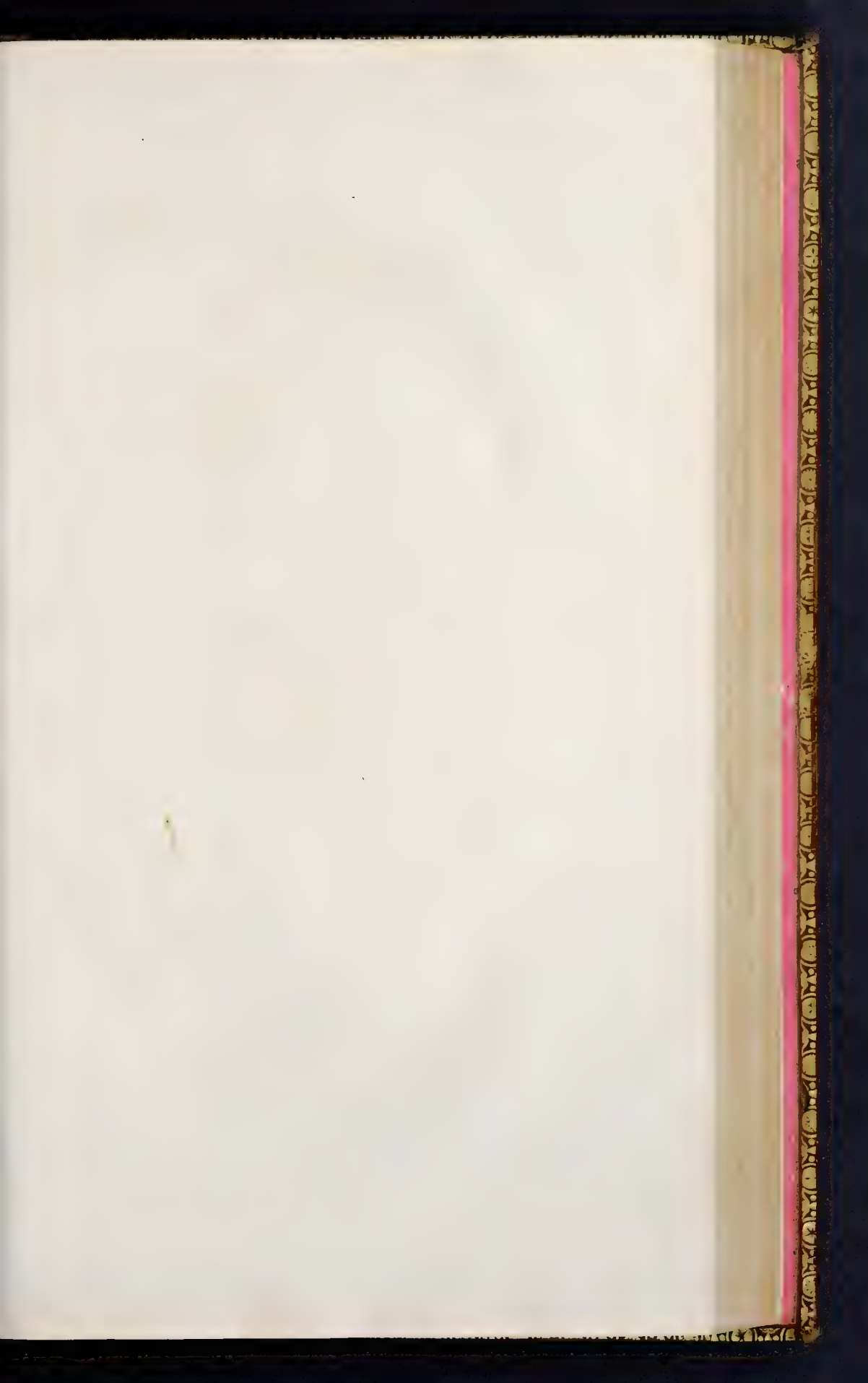
Thus much being settled, the nature of their decoration comes next to be determined : the same consideration here occurs again : they must be so ornamented that the whole may have reference to the principal building ; this is what will render them parts of the structure ; the common method of doing these things at random, makes them seem like pieces stuck upon it.

The front wall being rustick, and the upper story having columns, both must be introduced here ; we have spoke before upon the use of rustick columns, and condemned them, but there are instances, as we have there said, where they may be admitted ; and this is one. Though rusticated columns would have been abominable in the front of the building, they may be allowed in decorating a coach gateway, in the wall joining the wings ; and this gives the proper model for ornamenting that part. An order is to be employed to them corresponding with the order above ; and rustick is to be admitted to give a resemblance with the wall of the lower story : thus all will be of a piece, and the gate will plainly be a regular part of the structure.

What we have before said of the employing an order for windows where there is another for the principal parts, answers equally here. This lesser order should always be the next inferior to the principal, and that gives for these gates the *Doric*.

The wings are the only remaining part, and they are also to be made conformable to the main design of the building : no order should be employed here, for they are parts of a meaner sort ; but the windows should be well proportioned, and have the modest decoration usual in fronts of a middle kind.

Thus the whole building will be complete in itself, consistent in all its parts, and suited to its design.







Pl. 61.

1711

The construction of a town-house of the greatest elegance.

WE have thus led the young architect, by gradual advances, from the plainest to the more difficult articles in the theory of architecture; and having advanced thence to the practice, we have in the same manner conducted him from the plainest fabrick, to those of more and greater expence and decoration. We now advance to the close of this article: and we shall here lay before him the construction of a house in the highest degree elegant, built for a nobleman of the most distinguished taste, and adorned at the greatest expence. With this we shall conclude the present part of our undertaking, the succeeding books being intended for the decorations and peculiar parts of buildings.

We have already given the subterranean construction of this edifice, which is explained in our plate of sewers and drains; and we shall in the succeeding books introduce designs of several of its internal decorations under the article of CEILINGS and CHIMNEY-PIECES.

We shall, in the account of this capital house, follow the same method as in the preceeding numbers; and as we have there pointed out what might best be done upon a given space, we shall here shew the student what has been done: we shall explain to him all that is executed upon this design in an edifice universally applauded; illustrating the several parts with figures of the plan and elevation, engraved by that great master *Fourdrinier*.

Before we enter upon the particulars, it may be proper to observe, that the edifice we here treat of has its front to the west, and has before it a large court; and that the east front commands a spacious garden.

The level of the ground in all this extent behind is eleven foot below that of the fore-court. This might have perplexed the young architect; but he will see here in what manner such an irregularity is to be managed, and made an article of ornament instead of an imperfection.

Into this garden, the descent from the principal floor of the house is, by a double flight of stone steps, disposed with elegance and magnificence, and decorated with balustrades proportioned to the rest of the building.

What house in *London* it is that we are thus celebrating, few will be at a loss to discern from the elevation; but if any should not discover that, we shall add at the close of the work a table of explanation, in which we shall acquaint the reader, where, and for whom, every one of the designs already executed is built.

Book III.

The judicious architect who observes the great extent of ground in this structure, the dimensions of the building, the subterraneous construction, the boundary walls, and the extraordinary depths of the foundations from the inequality of the ground, will see it in the light of a great and capital undertaking.

The curious observer who shall enter into the spirit of it, in the free use of the *Corinthian* order in the colonnade, the elegance of the iron-work on the outside as well as within, and the high finishing of all the principal apartments, will not be startled when he hears the expence was five-and-twenty thousand pounds: perhaps there is not in *Europe* so much richness and elegance for the same expence.

C H A P. XXXIX.

The ground-plan of the edifice.

THE young architect who is about to enter with us on the consideration of this edifice, must first understand its place with respect to the area before. The principal building has before it a court 177 foot in length, and 94 in breadth, terminated each way from the house by a *Corinthian* colonnade, and flanked by the wings, containing the offices.

At the back of this court, and in its centre, is to stand the house; and its front is terminated by a wall and gates. This wall, including the offices, and continued round the garden, gives the general outline of the ground. The student will find the rules we have occasionally laid down in the preceding part of our work exemplified at large in this building.

In the centre of the front wall of the court, and directly opposite to the centre of the house, are placed the great gates of entrance; a law we have shewn to be founded on reason, but often neglected in great and good buildings.

This gateway, to suit it to the edifice, must be decorated with piers, and within, on each side, is to be allowed a small square room for a porter's lodge; the places of these are marked M. M. in *Plate LXI.* in which is given the whole ground-plan and distribution of the rooms.

The boundary wall is to be continued entire to the right; but the wing to the left, containing the coach-house and stables, should have the convenience of an opening to the street. This will require a gateway near the corner; but as this is intended for use, not shew, and is too remote to catch the eye at the same time with the house; the less decoration is employed on it the better. Its place is marked by an opening in the wall of the court, and a plain wooden pair of gates will best suit the purpose.

Entering

Entering the court the wings are to be seen on each hand ; in the centre the principal building, and on each side the colonnade. Chap. 39

This house being intended for elegance and magnificence must have the parts great. On this depends the distribution of the rooms, or compartition of the space : that is not to be thrown into a great number of small rooms, for this would disgrace the external form : and if, as may naturally be imagined, the rooms upon such a disposition would be too few in a house whose ground-plan was proportioned to the centre of the space, there is a remedy without deviating from the principles we have just established.

The young architect must not, for this reason, divide the principal floor into small rooms, for the sake of having a sufficient number for his purpose, but he must add others in adjoining places : this may always be done with ease and convenience, and if they be well disposed they will give a greater air of freedom and extent to the inside of the house, while they are an ornament and not a blemish without.

Thus in the compartition of the edifice, as laid down in the present plan, the rooms within the outline of the building can be only a small number, proportioning them to the intended magnificence.

The entrance must be into a hall, which, with the stair-case to the right hand, will necessarily take up more than half the extent in front ; the door being in the centre, and opening into it. This hall and stair-case are marked in the figure A.

On the left, in the same range, will be the dining-parlour ; this we have marked C, and it will be a handsome room, according to the proportion there allowed.

It is easy to see that no more can be done with the front line of the house, placing the stair-case in this manner : and the architect will find, after a thousand trials, that there is no way of placing it so well, even in point of room.

Behind the hall and stair-case, there must be back stairs, for in such a house this cannot be wanting, nor is there any other part of the plan proper for it.

As this takes up only a part of the extent of the back of the hall, there will be room for a lobby beside it ; and this is the only use that can be well made of that space.

We have in this plan marked the place of these back stairs B, and the lobby with the letter I.

This is all perfectly necessary ; and by this we see so considerable a part of the present floor occupied without any considerable room, yet designed, that there remains only a possibility of making one larger and one smaller on this floor.

Book III. Three rooms are by no means sufficient in a house of this kind, for the floor of which we are treating; we shall see what they must naturally be, and then consider how to add to them.

There is in front, on the left hand, only a dining-parlour; this therefore leaves a handsome space behind; but the back stairs and lobby take up so much of the other side in depth, that the space there is smaller.

Now with regard to the larger space behind the dining-parlour, the architect who thought there was no way to get a due number of rooms but by making them small ones, might divide this into two; but that would spoil both, and be beneath the dignity of the house. Let it therefore be made into one; it will be a magnificent and well-proportioned anti-room, and will become the rest.

The smaller space behind the back stairs and lobby may be divided into two rooms, because there will be two wanted in this part, and neither of them need be large.

A dressing-room, not far from the foot of the stair-case, is a very requisite apartment in a house of this kind; and near it there should be a waiting-room. They are apartments of convenience, not of show; and there requires no great size for either: therefore this part of the space will very well answer for both. The dressing-room may be the smaller, as marked in this plan at the letter F; and the waiting-room may occupy the space between that and the large room on the left.

A dressing-room in the house of a person of fashion is a room of consequence, not only for its natural use in being the place of dressing, but for the several persons who are seen there. The morning is a time many chuse for dispatching business; and as persons of this rank are not to be supposed to wait for people of that kind, they naturally give them orders to come about a certain hour, and admit them while they are dressing.

This use of the dressing-room shews also the necessity of a waiting-room where we have placed it. Though these persons are expected at a certain hour, they cannot always be admitted the moment they come, therefore they must have some place where to stay. When they are not there, it is convenient for the principal servants; who should have a room where they may be near their master, and in call.

This is the necessity of the two rooms we have here marked in our plan; and thus will the space be disposed of.

The architect will naturally say, that here yet want the two great apartments for such a house as this; these are a drawing-room and a library: they must be on this floor, and yet the whole is disposed of without them.

But if we were providing for in naming the additional connected rooms. The body of the house will not contain any more than those we have disposed of. We have disposed them in it, and the walls are to be

raised accordingly. These are to have other rooms over them to the top; but though the outline of the edifice terminate at these, there may be elegance, dignity, convenience, and every article that should come into the thought of a good architect, added by means of a couple of additional rooms formed of connected building: of these we shall speak in the succeeding chapter.

C H A P. XL.

Of the two additional rooms.

THE body of the house being thus constructed, will be decorated in front with the principal entrance, the door, the steps, and their ornaments; and behind by a flight of stairs into the garden: of these we shall speak more particularly hereafter. They finish the two ends of the house, but the sides are only plain; hence although nothing could be added to, or connected with, the ends, there is no objection in rule or regularity to the adding whatever convenience requires to the sides: therefore these are the places for the two additional rooms: their communication with the house will be natural, and they will open into the proper apartments.

The plan of these two rooms must be laid with perfect regularity; they must correspond with one another in all respects, in length, breadth, and height; and they will then have every article of convenience and grace. The room to the right is to be the library, and at the corner of this should be an adjoining little building for a water-closet; that on the left should be the drawing-room. We have marked the first by the letter G, and the other by the letter H, in the plan; the young architect will there see the proportions which reason and the rules of the science approve; and he will find it in the edifice perfectly answered in practice.

We see an addition of a great room now to almost every house of consequence, and we have taken occasion in a preceding part of our work, to rally that practice as the common race of builders now execute it.

Their faults or follies however, have no right to bring the practice into disgrace; for it is not the adding a part to a house, but the adding it improperly, that is the absurdity.

Let the student here learn the difference: in those houses which are ridiculous for their new rooms; the addition is made without any regard to the whole fabric; but here it is, though an addition, a regular part. In them it is stuck to the house, and here it is a part of the building; in the common practice it is a single part, for few have thought of adding two great rooms upon this vulgar plan; in the instance before us there are two.

Every one knows that in the large and essential parts of this kind in a structure, there should always be two, that one may answer another; or if convenience do not require two, the shell, or outside of a second, should be raised for regularity. Thus in the pre-

Book III. In this instance these additions are two; they are alike, and they answer to one another.

Instead of the common appearance of a large room added to the fabrick, which is always that of a wart, deforming the whole, or of a wen, threatening to pull it down, these appear of a piece with the rest; no excrescences or unseemly parts, but a regular addition to a regular building: and being conformable to it in structure, colour, and decoration, they are a beauty instead of a deformity in the out-line; giving at the same time variety and regularity.

This is an essential point in the practice of modern architecture. The builder sees every body wants a large room; let him therefore think of it in time, that his employer may not be reminded by some other person when it is too late: and let him not in any considerable building cramp or diminish the other rooms, and spoil a whole house to give scope to this. Let him construct the several parts as the plan and compass naturally direct; and when he has thrown the space, by a judicious compartition, into a convenient house with proportioned apartments, let him add such a room, if fashion continues to require it, as an exterior part; and place opposite to it the resemblance at least of another.

This will serve as a very agreeable deception both ways; for the house on the outside will look larger than it is, because of the added resemblance of the great room; and within it will have scope by the real addition.

From these, which are the principles of architecture, as old as *Greece*, and as authentic as the suffrage of the most eminent of modern builders can establish them, we refer the student to the plan of this building, where it is really and very happily carried into execution.

As to the size of such additional rooms, in all particular instances, he must be guided by those laws of proportion we have before laid down; for nothing can make amends for the absurdity arising from ill proportion. If he would fix in his mind the idea of a good general size, he will find an example here.

We have already observed that these two rooms are equal in dimensions, as well as alike in form; and their bigness is, in this instance, forty-two foot by twenty-four.

C H A P. XLI.

Of the construction of the additional rooms.

ELEGANCE must be observed in the construction of a building like this in every part; and these rooms, though additional, are to be understood as parts: therefore the same degree, and if the builder please, the same kind of decoration must be employed upon them.

Thus they will appear as parts of the whole. This is the first consideration: but there is another. They may be decorated, or they may be concealed; and in many cases the architect will prefer the latter course.

In the building now under consideration he will see a method followed, which at once gives him the choice of appropriating or concealing them; and shews in what manner, and to what purpose, they may be on the one part adapted to the building, and on the other concealed from the eye. Chap. I.

We have observed that behind this house is a large extent of garden; therefore there should be care taken that the back front, which is seen entire from it, may be fit for inspection.

These look into the garden; and as that affords an agreeable prospect from them, they will in the same manner afford a good object seen from thence. Therefore in this construction and design, their exterior part must be exactly adapted to that of the back front, and they will join with it. Thus there is light for the rooms, and a good object for the garden.

In the next place we are to consider them with respect to the effect they would have seen, from the front. Now as the building is entire without them; and, as we shall see by this elevation, sufficiently proportioned to the court, and suited to the wings, there will be no occasion for bringing these additions into sight. That which is perfect without addition, will always be hurt by addition; therefore it would be better in this respect there had been none.

That which is concealed is in respect of the eye as if it did not exist. Therefore if these rooms can be so hid that the eye sees the building without perceiving them, the impropriety of adding where nothing is wanted is concealed, and at the same time all the advantage and convenience are obtained that were desired. Thus it is managed in the present building: the inner compartment of the house has the advantage of these rooms; the garden has them as an object; and the front which is entire without them, is seen without them.

The student will observe there is a colonnade in front, adjoining each way to the house; this, for the sake of proportion, must be of a certain height there given, and the place of the two additional rooms being understood, they will be found to fall behind it: therefore to a certain height they would be concealed behind this colonnade, and the judicious architect must contrive in such cases, that the buildings do not exceed that height.

Now although two such rooms were requisite to be added to the plan upon this floor, there is no occasion in a house of this construction and design for more rooms above than may very well be contained within the compass of the principal building: there will be room enough for their number, and for their due bigness.

This takes away the necessity of building any thing over the two additional rooms; and by this is taken away all danger of their rising too high to be concealed by the colonnade.

Thus the fore front is entire; and the stranger when he enters the house is charmed to find two such rooms which were this way externally invisible.

Although there must be for this reason nothing over the two great rooms, there is no objection to any necessary convenience under them; and in the present instance the principal offices are placed, and are connected there, as naturally as the rooms with those under the rest of the house.

C H A P.

Of the colonnade and wings.

EACH way from the house runs in the present instance a colonnade: this is one of the noblest additional ornaments a house can receive, and in this edifice no price has been spared to give it the full dignity. The order is *Corinthian*, and its effect is very happy. It is one of those decorations that the four rules of criticism would call too rich for the building; but we see in this, one of a thousand instances that genius may depart a little from that cold severity of rule with happy effect.

Under the colonnades are arcades open to the east, which make a communication between the offices under the house, and the north and south wings.

We have observed that the coach-houses and stables are placed in the left wing, that being the north; and in the opposite, which is the right, or south wing, are the kitchen, larders, pastry, scullery, washhouse and laundry.

Over the stables is a mezzanine floor, properly divided for a granary; and above this are lodging-rooms for servants.

In the same manner the upper part of the other wing is divided into lodging-rooms for servants, and thus is the whole of this magnificent building constructed.

This is all that comes under our consideration in the present place, for the inside finishings belong to a succeeding part of the work; but we shall here observe that they are adapted to the whole.

The great stair-case ascends with three flights of steps; and is of white and veined marble, of a very uncommon size, and degree of perfection.

The screen which divides the hall from the stairs is of the same material, and formed in arches and half columns of the *Corinthian* and *Composite* order. The rooms upon the principal floor and that above it, have all expensive and rich ceilings and chimney-pieces, designed in the most elegant manner, and wrought in the best marbles; and all by the first artists in their several professions.

Of these we shall treat hereafter, among many other designs of ornamental parts of the same kind; and with this structure, the first in the kingdom for elegance, we shall close the present part of our work.

B O O K IV.

Of DOORS and WINDOWS.

The INTRODUCTION.

WE have had occasion to observe in the preceeding sheets, that not only the essential doctrines of this elegant science have been transgressed by very celebrated builders, but that in the most familiar things the same neglect is more frequently shewn to all rule and order. We have named this not for the sake of criticising what has been done, but to shew what should be avoided; and we shall pursue the same course here; aiming at real use.

Doors and windows must have been as early as human habitations; for the first man who erected the hurdle hut, or the clay cabin, could not have been so absurd as to climb in at the top, or shut himself up in darkness: therefore the construction of any habitation implied the use of these; and reason declares that the door would be suited to the human height, and the windows to the proportion of light required for the needful offices of life. Thus have been laid down by nature the laws for their dimensions; but it will astonish us to consider how they have been transgressed. We have seen at one period of late time, doors made of such height that one would think every house inhabited by a giant: and from this extreme, for according to the old *Romans'* observation, weak minds in avoiding one error always run into another; we have seen them lose the form and fashion, grace and dignity of entrances to a habitation, and wear the aspect of holes cut through the walls, to accommodate houses built for men to the use of pygmies.

It is enough to observe, that as all extremes are amiss, one of these is as faulty as the other.

With regard to windows, the same universal law, established by nature and authorised by reason, of admitting a proportioned and useful quantity of light has been as much transgressed. We have in the same manner run from the extravagance of excess, to the absurdity of defect. It is not long since our houses were so many lanterns, the piers seeming designed only to receive the frames of the windows; and from this we ran into the admitting light only through certain holes, as if for the use of a dungeon.

Let the architect who has thus far formed himself upon the principles of science, learn on this point the golden rule of moderation. We give him the general lesson here, and we shall in the succeeding chapters bring it to practice; and illustrate the theory by examples.

A COMPLETE BODY

C H A P. I.

Of DOORS.

TWO things are to be considered in the design of a door; the first its aperture, and the second its ornaments. These must both enter into the mind of the architect who is designing an edifice, or he will never proportion or adapt it to the structure.

How often do we see in *London* doors which appear not to belong to the house, but to be joined to it against nature; that seem to have been stuck on, not raised with the building. It is common to see doors whose breadth occupies near one half of the extent in front; and in *Dover* street there is one whose top covers half the window placed over it in the upper story. This is the error of those who mean to be magnificent; but the opposite is too common in plain houses. Doors are put which seem to say, no fat man comes into this house; and they always disgrace the whole building.

We have shewn in treating of elevations, how the most plain and small house may be made convenient; and we shall observe here that it may also be erected with a peculiar kind of beauty.

Its sole grace must lie in proportion, therefore let not the architect omit that most essential point.

The variations in the antique are in this instance very great: and from this it was that *Palladio* evaded giving rules for the dimensions of doors in proportion to houses. He was sensible he could lay down none against which some instance might not be brought in those buildings which were allowed masterly in their kind: and he therefore left it undetermined. He gives no rule, and he says none can be given; all he directs is, that they be proportioned to the dignity of the inhabitant of the house. We must here dissent from him, and determine that, be the condition or benevolence of the master what it will, the door ought to be proportioned to the other parts of the building.

There are many things in which the ancient architects have erred, and it will be a double error in us to copy their faults. This great variation in the height of doors is one, and in their construction there was a greater. They did not in general make the aperture equal all the way, but contracted it upwards. This must have had a strange effect. A door narrower at the top than the bottom must have appeared a deformity in any building, though over it were written the name of *Hermogenes* as architect.

These antients, though much greater men than our present architects, were but men; the science, which they carried to such a height, they did not perfect. The limits of these things are not fixed at any certain point, nor are the powers of genius fettered by such boundaries. While we admire the dignity of the *Grecian* or the pomp of the *Roman* doors, let us see also this contraction as an egregious error: and if we refer to *Palladio*, or to the oracle of *Palladio*, *Vitruvius*, on this account, let it be to dissent from their opinions: if we turn our eyes to the temple at *Tivoli*, let us place the door there as an object shewing what we should avoid.

With regard to the *Italian*, we have shewn he was lost in the diversity of what he Chap. I
 read, and what he saw: as to the *Roman*, he seems to have received it as a law in the
 science, that there should be this contraction; and when he directs that in doors of more
 than thirty foot height in the opening, there should be no contraction of the diameter,
 his commentator *Philander*, who rarely misses his sense, says this was because at that
 height the nature of vision answered the same purpose; and the contraction was given
 to the eye by distance.

C H A P. II.

Of the dimensions of Doors.

THE architect will see by this free disquisition, that the antients are not proper
 instructors in the dimensions of doors; how much soever we may learn from
 them respecting their ornaments. He will see also that the most famous of the mo-
 derns has left him uninformed on this head; and if he look into the common books
 of designs he will find nothing but absurdity. There are in none of the parts of archi-
 tecture monsters equal to those we find in these books intended for this purpose:
 this is the state of the matter in all of them; the more as well as the less respected, and
 throughout the whole course of time from *Francini* to *Batty Langley*.

The defect on this head we shall endeavour to supply; and whatever merit we shall
 attain by attempting improvement, the student may depend on this, we will not lead
 him into errors.

With respect to the height of doors in the aperture, there is an universal law in rea-
 son, though not observed: there is a certain height below which they must not be;
 tho' for dignity and proportion the field in which they may exceed is almost unlimited.

The human stature is the mark for the least height that can be proper, and this is the
 same among the vulgar as the noble: he who makes a door is not therefore on any
 consideration to descend below this established proportion. If he should give it as an
 excuse that the owner was of low stature, boys would laugh at him; those who visit
 are not proportioned by the height of the possessor of the house, nor may his son be
 of his stature; or the next inhabitant.

It is therefore as improper to construct the door to the stature of the owner, as to
 the greatness of his hospitality. Though the heart of *Bevilacqua* was bigger than his
 door, that of his successor in the palace might have found room in a nut-shell.

For the lowest door then the height must be such as that a man of the highest
 common stature may go through it without stooping. This limits the measure to six
 foot: below this the door of no house should be made, even of the plainest; but above
 all is left to fancy guided by the general idea of proportion.

The height being thus determined, the breadth comes into consideration; the sides
 must be so distant that they must not crush the largest body; nor is it fit they should
 reduce a man to enter with his arms in any particular posture: as he is to go in with-
 out stooping, so he ought also to be able to walk in at ease. The smallest dimension
 therefore in breadth that can be allowed is three foot; and this being the half of the
 given height has a very good effect in respect of general proportion.

These

Book IV. These are the rules laid down by nature; and these being allowed as truth become the foundation of all the other proportions. While we are near this, we are sure not to err; and this ought always to be kept in remembrance for that purpose. He would have reason to complain of the confined laws of the science, who fancied that from this every door must be made the exact double of its breadth in height: there are peculiar constructions which require particular measures; but as in all other cases there are bounds which must not be transgressed, so in this there is a latitude, as we shall shew, within which the fancy may rove, but which it must not pass.

The dimensions being thus in their first sense considered, we are to regard them as necessarily varied according to the nature of the building.

In proportion as the house is larger the door must also be enlarged. This is an universal rule: and there being some variations, though they are of a limited nature, in the proportion of height and breadth, these must be appropriated also to the general form of the house.

We have said that for the plainest doors the proportion of height to breadth must be double: this is to be a little varied at the pleasure of the architect; and he must thus employ his liberty.

If the front of the house extend considerably in breadth, in proportion to height the door must be adapted to it, by having a proportion of breadth somewhat too great for its height; upon the preceeding principles, and in the same manner, if the building be one of those which rise to a height without any great breadth, the door for it should be made a little more than twice as high as broad, to accommodate the figure of that as of other parts to the form of the whole.

We shall in a succeeding chapter speak of the decorations of doors; but in this place it is necessary to observe thus much, that the ornaments must in the same manner be suited to the aperture of the door, and to the entire body of the building.

The ornaments usually employed will bear to be extended or retrenched at the sides, as the architect shall see proper; and he must make them broader or narrower as the opening of the door is wider or more contracted; and by this means they will be suited at once to the opening and to the edifice, to that part and to the whole.

In the same manner the pediment is a part which the architect may construct upon his own principles. We have given the best proportioned height to breadth in a preceeding part of the work, and we here shall illustrate the subject farther by figures of proportioned pediments over doors of the several orders; but at the same time we are to tell the student, that although what we have given in these and the plates of the succeeding number be right, it is not all that can be right. A pediment higher or lower than what we have given would not suit the other dimensions and ornaments in those figures; but there may be others of innumerable kind, bearing different proportions: in such the builder is left to his liberty, and he is to use it to the purpose we have named, making it an universal rule, that as the whole building, and in consequence of our rules its door also, is extended in breadth in proportion to height, the pediment is to be lower: and as it is taller, and the door with its ornaments are narrower, the pediment is also to have a somewhat higher pitch.

These

These are liberties he is to take, but they must be taken with discretion: great variation from common proportions will be always wrong; and it is never needful, because a door is so obvious a part that lesser will be seen. Chap. 2.

As our first rule of the proportion of doors is absolute, and yet capable of variation without a fault, so the student is to regard the figures we give in this and the succeeding numbers. We shall venture to say they are proportioned justly, and that the rules of architecture are perfectly followed in their construction; but from these he may vary a little as occasion shall require, or the general proportion of the fabrick shall demand.

C H A P. III.

Of the elevation of Doors.

THE form and dimensions of doors having thus been established upon some principles, we are to consider their position. This varies according to their distance from the level of the ground, and is to be governed by the height of the floor to which they belong.

In the plainest and most ordinary houses the door is upon the level of the ground, but this is wrong for a very obvious reason. There is to be some settling expected in the house, and experience shews that the ground in all inhabited places naturally rises in surface.

Therefore a house whose floor of entrance was placed originally upon the level of the ground, will in a few years, from the concurrence of these two accidents, or from one of them, be below that level; the door will then stand below the surface of the ground, and we must go down stairs into the house: this is to be avoided both for show and service. A floor under the level of the ground will be damp, and the door, if well proportioned at first, will be too low for its breadth; at least it will appear so, which in this respect is the same thing.

This is a reason why a door should never rest upon the level of the ground; but if against all rule the builder or the owner will have it so, the proportion to be observed is this; it must be made somewhat high in an over-proportion to the breadth, because the eye at first will reduce it to the appearance of regularity, and probably accidents afterwards will place it below it.

This is a rule that in itself will not, we hope, come often into practice; but it gives the general law to what follows.

Hence is derived a principle that ought to stand as unalterable in itself; that the more the door of a house is raised above the level of the street, the more its breadth should exceed the natural proportion with respect to height.

This depends upon the nature of vision, which in these near objects ought always to be consulted; for the higher the door is placed, the narrower it will appear by distance, and therefore the broader it should be made in the reality.

These are points which deserve to be considered much more strictly than they are, for upon them depends entirely the proportion: at the same time we are to tell the young architect, that all we speak here of variations, is meant to those of a very small kind; for when a certain rule of proportion is established; no cause must lead us too far either way from it.

Book IV. In the earliest architecture we find that the custom was to place the door at a considerable height above the level of the ground; and in all magnificent buildings it should be thus raised, and in others in proportion to their size.

The raising the door after the old *Greek* manner gives many advantages. The floor to which it opens has elevation, better air, and the advantages of prospect. There is the benefit of rising to it by flights of steps, which whether single or double are of great ornament, and may be carried to any degree of elegance according to the pleasure of the purchaser: it also gives a good floor below for the use of the better sort of servants.

For all these reasons we see it best to give the door an elevation, and we have directed the architect to the only method by which one of this situation ever can be rendered truly graceful.

C H A P. IV.

Of the use of columns in the ornament of Doors.

WE are now naturally led to the ornaments of doors, and are to propose, as their first and greatest decoration the use of the orders. They are the noblest and the most graceful part of architecture, and are therefore finely suited to what is to make the first impression; as a door naturally does.

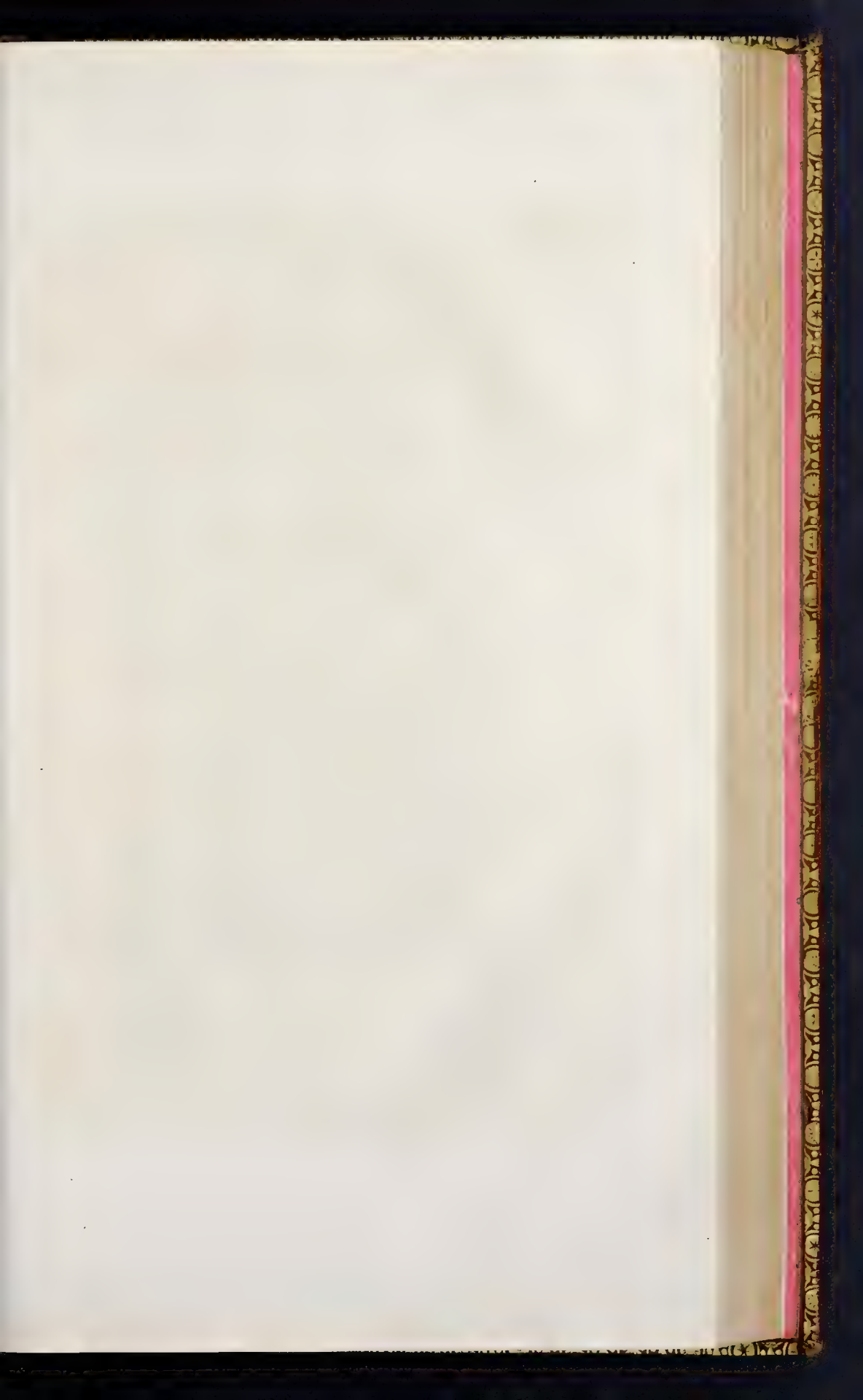
Their expence is no where an article of so little consideration, because they are here smaller and fewer than in the other common uses; and the architect of taste has this reason to be pleased with them, that he has in their construction a scope for all the boldness of his genius, and the best flights of his regulated fancy.

We have in a preceding part of this work shewn what great variations may be authorized by the remains of antiquity in the construction of every one of the orders; in the ornaments of doors there is full scope for the imitation of all those of the ancients, and for the devising new ones: and from this may arise a dignity and grace unknown hitherto in architecture.

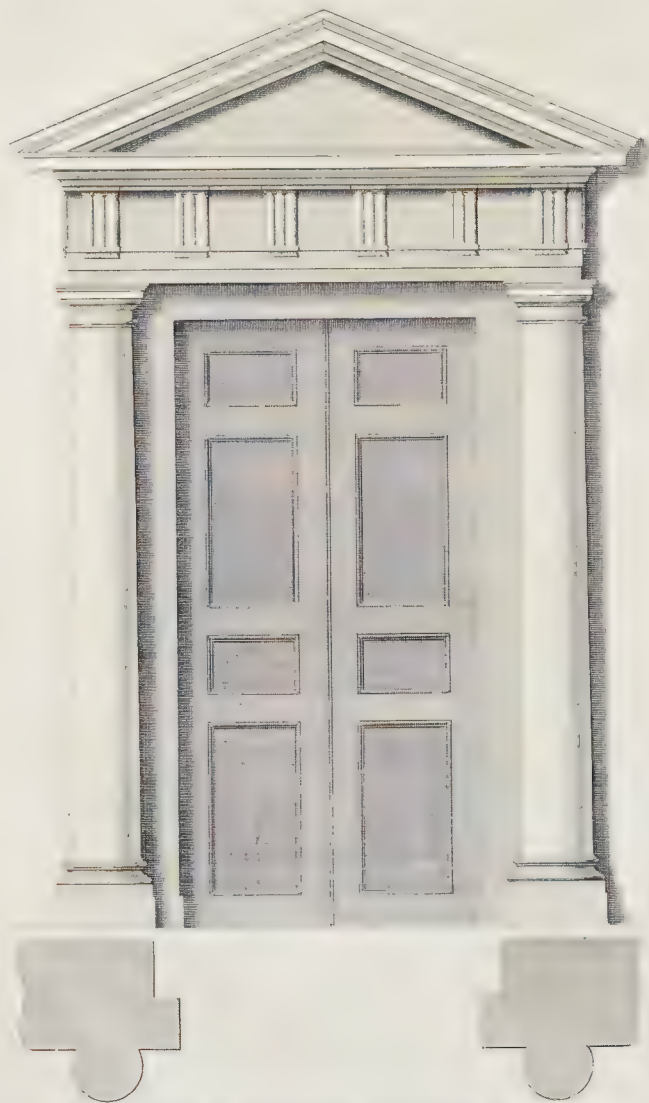
We have here added by way of illustration of what we are saying in this place, the figures of two doors decorated with the *Doric* and *Ionic* orders; and in these for the service and example of the student in his first designs, we have adhered strictly to the proportions established for those orders by *Palladio*; but having formed to himself an idea of strict proportion from these, he may be taught how to vary with success from the exact regularity.

We have shewn him in this place under what circumstances his doors should be made more lofty, or less so, in proportion to their breadth; and in a preceding place we have given him examples from the antique of various proportions in height and diminution in the execution of every order. From these he is to select what will best suit the purpose of every particular door; for it will be proper for him to give the greatest heights to his columns and their capitals, where the door is to be, according to its situation, narrower than usual in respect of height; and on the contrary to select those columns from among our examples of each order, which are lowest, where the door is broader than the exact proportion of height would dictate.

This



A Door of the Doric Order.



This is the true use of these remains of the antique, and by such a method of employing them they will obtain as much credit for the architect, as in a random choice they would disgrace him. Chap. 4.

One thing remains to be observed with respect to the diminution of columns used in ornamenting of doors, that the greater this is, the less they are suited to the purpose. This is one of many reasons that ought to banish the *Tuscan* order from this piece of service. Its diminution is not only the greatest of that of any order; but it is greater beyond all proportion; and looks as if ill-formed where made with ever so much truth.

The other orders are no way more happily used than for this purpose: their diminution is the great grace of their form, and it is never shewn so plainly or conspicuously. The upright of the door-case, before which it stands, is as a measure to the eye, and the whole being near, and the form of the column distinct, the diminution is seen in the whole out-line.

This is a very obvious reason for preferring columns to the vulgar custom of pilasters on this occasion; but at the same time, as we have observed already, the peculiar diminution of the *Tuscan* being too great to be born, on so near and so distinct a view, should exclude it from this use in the ornaments of doors.

C H A P. V.

The construction of a door in the DORIC, and in the IONIC order.

THE two examples we shall here give of the use of the orders are of the *Doric* and *Ionic*; and the general direction to be laid before the student is, that the parts be all proportioned; that no way be given to a vitiated fancy in adding unnatural ornaments; no placing of the entablature of one order over columns of another, as we see too often in *London* in what are called composed door-cases, but that every thing be proper and just.

The plainest door we would ever advise him to make of this kind is with the *Doric* order, and for this we have given him a drawing in *Plate LXII*. In this he will perceive all the parts, to the minutest mouldings, preserved in the form in which they are to be wrought, and the ornaments of the freeze in their proper place and disposition.

This is a door of small expence for one with the orders; and the columns may at his discretion be either made of solid timber, or of pieces glewed together: but in this case and most others we shall advise the making them hollow and of pieces to avoid cracking.

If he have a mind to decorate this door farther, the method is open; we shall not repeat what has been already given in another part of the work, but refer him to those pages wherein we have treated of the *Doric* order: he will there find that the shafts of the columns may be fluted; that roses may be added to the neck; and that the metopes or spaces between the triglyphs may be decorated with variety of figures.

Book IV. These additions with what we have farther directed under that head to be occasionally done, will shew the builder how much is to be added for the enriching of that order: and all the time he is to observe invariably the construction and proportions given in this figure.

Thus the young architect will see in what manner he may enrich and raise to elegance a *Doric* door; but if the utmost ornament he can with propriety give to that order be not sufficient for his purpose, he is not to run into impropriety and confusion by adding false decorations; but in that case to chuse a superior order.

The next above the *Doric* is the *Ionic*; and of this we have here also given him a figure; that comparing the natural and proper decorations of the two, he may see by what degrees they rise one above another; and whether for his present purpose it be most adviseable to decorate this first, or to chuse in its stead the second order,

As we advise him rather to chuse the *Ionic*, than to give improper decorations to the *Doric*, we must in the same manner direct him, when he has chosen this second kind, to adhere strictly to rule and method, and admit no ornament but what has authority from the antique.

We have given him in the figure *Plate* V. XIII. the form of an *Ionic* door, according to the proportions of *Palladio*: the first cast of the eye, even of the unskilful, distinguishes the great decoration and grace this kind receives from the capital with its volutes, and the modillions of the cornice.

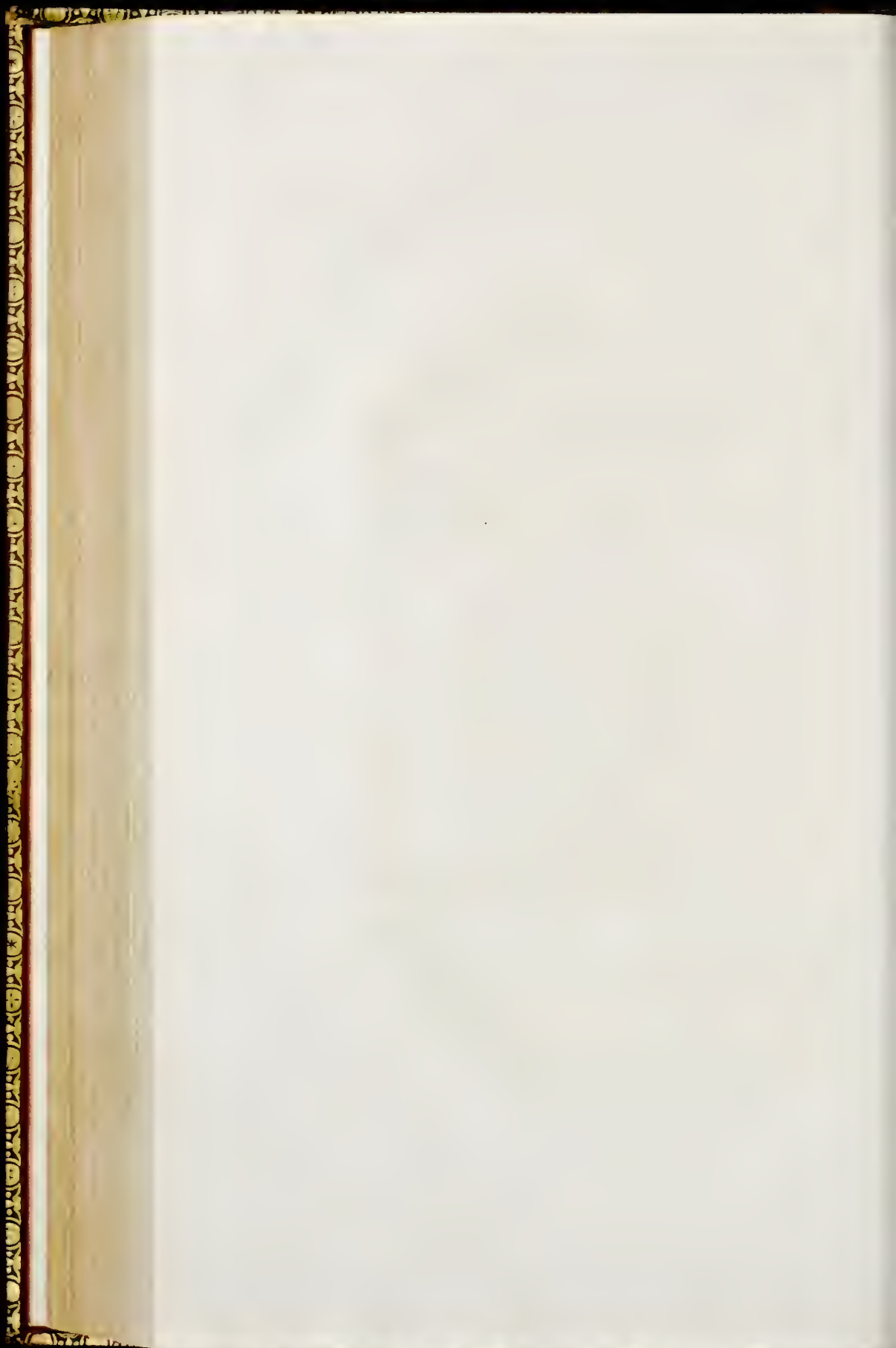
Though we caution our student against any unwarrantable liberties on this head, he is to remember that there is great variation in his power, within the strictest limitation of rule, and under the support of authority from the antique.

We have given in the figure the antique *Ionic* capital, and the swelling or pulvinated freeze; but he knows from what we have observed in treating of the order, that he has his choice to use the modern capital and the flat freeze, which he may adorn at pleasure with sculpture; and in other respects add, without transgressing the laws of the science, much decoration.

Pl 65.

A Door of the Ionic Order .





Of the use of the more elegant orders in doors.

WE have observed that the greatest decoration of doors is by means of the orders ; and we have given instances of the use of the two plainer illustrated with figures. The *Tuscan* we have declared in general least fit for the purpose : therefore there remain to be considered only the two more rich and elegant to be appropriated to this use. But before we advance to these, let us take a review of what we usually see finest, as it is thought, in this way, of the present, or of a somewhat earlier time.

A plain opening left in the wall was doubtless the first door-way ; and it continues the plainest : it were well if we could not say, it would be to the advantage of many decorated entrances to good houses, if all the expence could be removed, and the opening left naked as it came from the hand of the bricklayer.

From the plain door-way, the advance to that ornamented with the lowest order is by many stages : and in all these there is such a thing as plain propriety, which only a vitiated fancy could transgress.

The great error is that of crowding ornaments of a superior kind into a work of an inferior : this is as absurd in the least things as the greatest. The capital of the *Corinthian* order put upon a *Tuscan* column, could not be more monstrous than the bringing in here the decorations of one kind to the plan in another.

We have advised that when the *Doric* with its best proper decoration does not appear rich enough, instead of adding what is unfit, the architect should chuse the *Ionic*, and the same rule holds here universally : let the builder see it in this light. If a door with an architrave ornament cannot be made rich enough by proper sculpture to please the eye of the possessor, let him not introduce into it the decorations appropriated to other kinds ; but at once advance from that plan to a design with an order, and laying aside the other entirely adhere to this.

There is nothing absurd but from the mixture of improper parts ; and nothing is ridiculous that is not absurd : therefore let him keep only propriety in his mind, and he will be sure to escape censure. The plainest door that has proportion in its dimensions, and propriety in what is placed about it by way of ornament, will give satisfaction not only to the judicious, but to every eye, while ill-judged ornaments raise contempt. Let it be an universal rule deduced from this principle, that where there are not columns introduced, there should be no resemblance of them. With what disgust does the judicious eye look at that door where the conceit of the architect has formed a half column out of some of the mouldings, which running up to enclose a compartment above the door, together with it, is fifteen diameters in height, and has a fancied capital to crown the absurdity ? What contempt must this unnatural *Gothic* piece of business raise in all who look upon it ?

If the architect will have any resemblance of a column, let it be a column in due proportion ; a little judgment will direct how to dispose the compartment above ; and less expence than pays for this absurdity will finish the work with propriety.

We speak here of an inside door ; but we are to tell the reader once for all that all our figures may be the models of doors, either for the outside or the inside, as the condition of the building, and the magnificence of the rooms requires.

C H A P. VII.

Of the original decorations of doors.

THE original thought of decorating a door-way was no more than by a plain case of wood with a bead at its edge. The sharpness of the corner, or angle of the brickwork was disagreeable, as also its roughness ; add to this it daubed the cloaths of those who passed in ; and being a sharp edge of a weak substance, it was broke and made irregular by every little accident. This put it in mens' minds to case or cover it with board ; and the inconvenience of its sharpness made them cut a moulding, by way or bead or plain astragal, all the way its length.

Thus were doors ornamented in the earliest times of building ; and as they were then under the conduct of men of true taste, they were able to proportion the breadth of the wood-work to the opening of the door : and terminating at the extreme edge with another astragal, there was a plainness, but still there was propriety and use ; and when these unite there never wants beauty to the discerning eye.

Upon this first idea of a door-case were formed all the decorations which we have seen introduced. The plain breadth of boards offended the eye, and the old architects carried up along its middle a festoon of various contrivance.

The oak leaves and fruit gave the first hint ; the olive succeeded this, and afterwards the vine : this gave a beautiful freedom from its ramping figure, which they knew how to restrain with judgment ; and from this they reached the acanthus leaf ; in their judgment the height of vegetable beauty.

From thence they began to diversify the festoon with symbols and instruments of sacrifice, and thence they came to hieroglyphicks.

As the plain case of the door received this ornament, the bead at its edge swelled by degrees, by the addition of more and larger mouldings, to an architrave. This was finely varied, and the freeze which crowned it at the top received all the decorations of sculpture given to the pannel.

Thus far advanced, the orders were introduced naturally; and here among those great builders ended the decoration. They selected the columns most proper for the occasion; and they used them with the same correct taste in the door of an edifice of the least kind, where they were admitted, as in the portico of their most magnificent temples. Chap. 7.

Thus began, and thus was raised to its perfection, the decoration of doors among the *Greeks* and *Romans*. Here they stopped, for they had judgment: but the luxuriant fancy of those who followed them, admiring their works, but wanting the taste which regulated them, flew into every absurdity that the whole scope of things could afford. Of this we see instances in many expensive works which stand, and will stand, to disgrace our country: and we have models of them, and of others as ridiculous, proposed for imitation, and published, as the titles say, for the instruction of builders.

We have seen architecture, a science founded upon the soundest principles, disgraced by ignorant caprice; and fashion very lately has attempted, and it were well if we could not say attempts now, to undermine and destroy it by the caprice of *France*, and by the whims of *China*.


How must a man of true taste frown to see, in some of the best buildings of that country, famed as it would pretend, for the encouragement of arts, *Corinthian* capitals made of cocks' heads, instead of leaves of the *acanthus*? And how must one blush to see this most absurd variation from the figure and design of the antique, give to its inventor the glory of having added a sixth order.

It is called the *French*, and let them have the praise of it: the *Gothic* shafts and *Chinese* bells are not beyond or below it in poorness of imagination.

It is our misfortune to see at this time, an unmeaning scrawl of (C's) inverted, turned, and hooked together, take place of *Greek* and *Roman* elegance, even in our most expensive decorations. This is not because the possessor thinks there is or can be elegance in such fond weak ill-jointed and unmeaning figures: it is usually because it is *French*; and fashion commands that whatever is *French* is to be admired as fine: the two words (so low are *Britons* sunk) mean the same thing!

Let us propose against this poor unmeaning fantastic figuring, the plain manly noble orders, which dignify the *Roman* structures, and have preserved, more than two thousand years, the *Greek* remains, even in the countries of barbarians. These, in spite of this prevalence of fashion, are never seen with us but they are admired. Let us make it a point to restore their use; and whenever *France* is named, lay *Greece* before the eyes of those who would have chose the other model. If they will chuse it then, they deserve no better.

While these *French* decorations were driving out, from the insides of our houses, those ceilings which a *Burlington* had taught us to introduce from *Roman* temples, and those ornaments of doors, (our proper business here) which a better taste under *Inigo Jones* had formed upon the models of the best *Roman* structures; the *Goths* seemed to have seized upon pavillions, and the *Chinese* on rooms of pleasure. The jointed co-

Book IV.  lumns rose without proportion for the support of the thatched roof in some lower ground, while bells dangled from every corner of the edifice that caught the traveller's eye upon an elevation.

True taste and good admonitions have got the better of these; and they are left to cake-houses for sunday apprentices: the *French* are more difficult to conquer; but let us rouse in every sense the national spirit against them; and no more permit them to deprave our taste in this noble science, than to introduce among us the miseries of their government, or fooleries of their religion.

Upon the most impartial review we shall find that nothing in greatness, or in grace, can compare with the *Greek* or *Roman* architecture; therefore let us employ nothing in the place of them: and if any suppose it is a limitation of genius, in this article of the decoration of doors, to permit the use of no other ornaments, we are to tell him that he has little idea of what variations the antient practice allowed, and the remains of it will justify. Whether he would enrich the architrave, or add the column, there lies under each head so vast a fund of variety, that all the buildings his life can raise will never exhaust it, or give him cause to complain he wants a new resource.

C H A P. VIII.

Of the use of the fanciful orders about doors.

WE have allowed four orders as very proper for the decoration of doors, and custom has taken in the fifth; for though we are far from recommending the *Tuscan*, there are those who will use it. Beside these the free licentiousness of fancy has in some places called in the *Persian* and *Caryatic*. The figure of a man, or woman, have been placed to support the architrave and freeze, instead of a column of one of the regular orders; and there are instances where it has been done with propriety and beauty. For one such, however, there are many where every thing about them is improper, absurd, and disagreeable. We do not absolutely banish the use of these fanciful orders, though we are far from recommending it; and as we shall no where leave the student without instructions for doing properly what we advise him to do at all, we shall here lay down the general maxims by which he is to be governed.

Let him first consider the size of the door, and the proportion of its ornaments. By these he is to be led to adopt out of these two orders that which will best suit his purpose. The man, being the more robust figure, is to be selected where the door is large, and its ornaments are massy; the female figure for the lighter and less.

As all objects that represent pain disturb the imagination: let him therefore avoid the common error of representing the *Persian* as if crushed, and sinking under the weight of the entablature. Let the head and shoulders be erect; not, as is the common custom, thrust forward; nor let the face represent a *Lacoon* in anguish, rather an *Hercules* taking the load from *Atlas*, and shewing in his countenance how light it rested on his shoulders.

Respecting the drapery of the figure, let him remember it is to be *Persian*. It must fall to the feet with a graceful folding; and the arms be so disposed that they be in no danger of accidents. Chap. 3

An inside door is a place of continual passage; and sculpture, in rooms where it does not exceed the human height, is liable to frequent accidents.

This is not enough considered in the decorations in rooms; we scarce see them a week perfect, and the loss of a wing, or finger, is a very disagreeable sight.

This then is the rule for the *Persian* order. That the figure be robust; that the drapery cover it to the feet; that the face be serene, and the hands secured; we shall add, that in most cases it will admit, and in many it will require a pedestal, and that this, well proportioned, will be a grace rather than an imperfection.

If the door be of the lighter kind, the *Caryatic* is the better order. A female is the more graceful figure, and therefore whenever it can be introduced with propriety, it is to be preferred to the other.

In this we are to remind our student of the same general caution, that the figure do not seem oppressed, or in pain, that it be properly habited, and that the hands be not placed so as to fall in the way of accidents.

This is the general rule; but there are also particular cautions, which need the more to be inculcated here, because they are too frequently transgressed.

As we have directed the *Persian* figure to be so made as not to shock the humanity of our own sex; let care be taken that the female be so decent as not to offend the modesty of the other: it is an idle freedom painters and sculptors have equally taken of representing female figures almost naked. Enough of the mastery of their art may be shewn without this; and indeed they generally fail in those parts they so unneedfully expose.

In this case it is also against propriety as well as decency: naked legs and uncovered breasts, of all people in the world, belonged least to the *Caryatic* women. We have enough of antient history, in this respect, to inform us that the habit of their country was long, loose, and gathered about the middle; that it hung from the neck to the feet, and that across the shoulder they threw a breadth of another kind, which was tied up in two knots before.

This is a habit which a good sculptor might have merit in imitating; and he would have the praise of being at once decent and natural. This we recommend where fancy in the possessor will have this kind of order to a door; and what we have to advise farther is, that as the woman is naturally lower in stature than the man, this figure be always placed upon a pedestal, and that it be never made otherwise than light, airy, and graceful.

These are the best rules for performing what it is better upon the whole to avoid; but the fancy of the possessor is always to be pleased when it cannot be reformed; and the architect's praise in this case is, that he has done a wrong thing in a right manner.

Of symbolical figures in the ornaments of doors.

THE use of the *Persian* and *Caryatic* orders in regular architecture, let in a variety of other figures, as improper for the purpose as themselves. Architects of less genius took hold of this imperfection as a source of improvement, and thought to add a new figure was to introduce an order. Hence came the representations of the virtues and the vices, under human forms, into the place and use of columns; and after them the innumerable train of all that could be represented under the human shape.

The four seasons, in form of so many naked virgins, supported the roof of a summer house; and the door of a court of justice was decorated on each side with her figure blinded, and weighing nothing in her scales. Angels were called in to support the architrave in churches, and he was the best sculptor who could make their wings meet in the handsomest manner over the door.

The instances are innumerable that might be added on this occasion; but it is enough to tell the reader they are all wrong.

We have said before that *Persian* and *Caryatic*, though supported by the reverend names of *Greece* and *Rome* are bad: what then are these poornesses of imagination! they are but the imitations of that which is in itself beneath all praise, though it is not without support.

In all these things fancy assumes the place of judgment. And none but those who have fancy instead of knowledge or taste for their guides will be pleased with them. The making chastity support an entablature is ridiculous; and did not the folly save the censure, we should say the loading an archangel was irreverend. There is no temptation to use these figures, because columns will always come cheaper, and the worst judge, if the architect will represent to him in two drawings the figures and the columns, will give it in favour of the proportion, grace, and regularity of the latter.

The student will remember we have named these things only to condemn them; and he will leave the figure of fat justice to decorate a *Dutch* court house, and St. Michael to support a *Gothic* belfry; the only fit purposes.

C H A P. X.

Of the use of terms, as ornaments to doors.

WHAT we have mentioned hitherto are entire ; but there are also a set of imperfect figures, which fancy has, in different ages, brought into use on this occasion. These are what are called terms ; we have explained their nature before, but may add here, they are a sort of human head and breast, without arms, and sinking into a wooden scabbard.

There is the same reason against preferring these to columns, as has been alledged against using the former figures ; but, beside that general negative, there is a particular one placed upon them in this instance. They have a mutilated look, and they always disgust for that reason. It was but a poor conceit in the antients that gave them origin, and they are better banished many uses to which we, after their example, apply them ; but with most reason of all from these.

The unnaturalness of the figure is in reality abominable, tho' custom has rendered it familiar. A harlequin letting himself down a funnel is not a more ridiculous object ; nor is the representation of the part of a woman's head and neck, terminating in a fish's tail, any thing more absurd, than the form of a deity ending in a post.

In this purpose of the decoration of doors, for which some have employed them, there is also the farther mischief, that they are naturally out of proportion.

If there be in nature any decoration in which a perpendicular is requisite, it is in the construction of a door-case ; for the opening itself being terminated by perpendicular lines, requires that every thing should correspond with it : and this is one reason why the orders so happily become this office.

Their diminution is no obstacle, because it is regular and is equal on each side of the shaft, so that the perpendicular of the central line is never lost to the imagination, nor its course ever disturbed or altered to the eye : on the other hand here is in these figures a swelling out beyond all order at the breast, and a more monstrous shrinking in at the bottom.

What is the sculptor to do to disguise these ? He has no way but by the addition of impertinent and foreign ornaments, and they always disgust.

When he has thus hid those imperfections he might have avoided by a better choice, he will have bestowed more pains and expence than it would have cost to raise the Corinthian order ; and he will have placed there a figure whose face and form will naturally displease, the central line of whose contour will never be truly perceived ; and consequently whose support of the entablature will therefore seem uncertain, and threaten its fall.

Of the use of pilasters in the ornaments of doors.

PILASTERS are very frequently used for the decoration of doors; and after the more improper things which have hitherto employed our attention in these chapters, they come with a good grace. It is certain a pilaster of any order is better than the best of those fanciful ornaments; but the question is, why a pilaster should be used when it is as easy to place a column in its stead? It very seldom happens that any answer can be made to this but a confession of bad taste. So it is, and for this reason we shall enter as far as needful into their construction on this occasion.

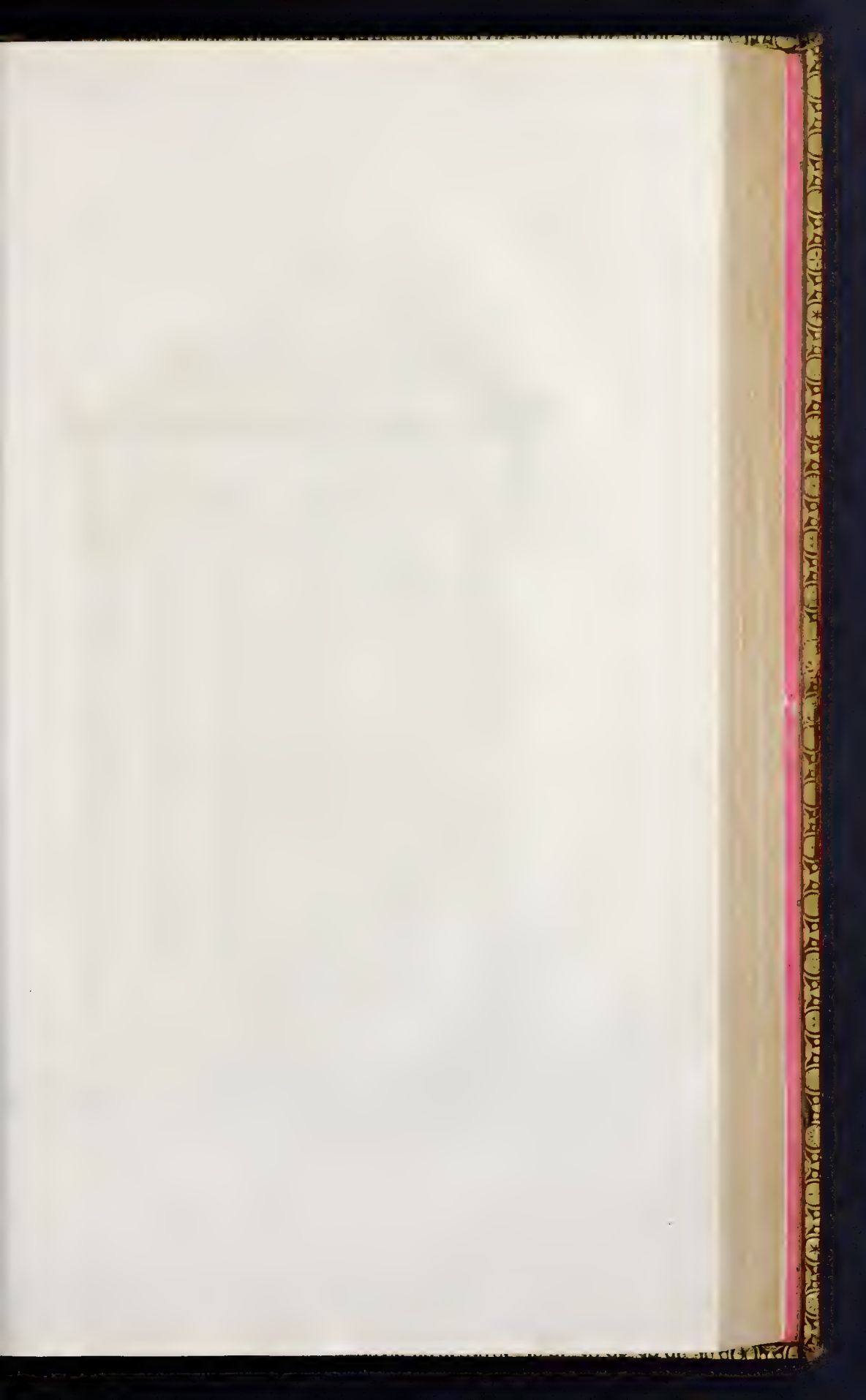
Never let a pilaster be used to any door but a large and lofty one, for if there be any thing that takes off from the harshness of the pilaster it is its height.

Never let a pilaster that ornaments a door rise from the floor, but always give it a pedestal.

The laws of architecture admit that, according to the fancy of the builder, the shaft of the pilaster may be either plain or fluted; but in this case the law of reason is absolute that it must not be plain.

The round form of a column breaks the light so agreeably, that plainness in it is not disadvantageous; but it is not so here: the plainness of a pilaster is absolute flatness in every sense of the word. It offends the eye, and there is a pooriness in it never to be forgiven. The angles of a pilaster always give disgust; their sharpness is harsh and unpleasant; this is never perceived so strongly as when the face of the pilaster is plain: this is therefore another reason for fluting it. The eye being employed among the flutings, and the lifts between them, does not so plainly perceive the sharpness at the edge, which now seems only as the edges of the lifts, or separations of the flutings. They also diversify the light and shadow, as well as take off the harshness of the edge, and are thence calculated as happily as any thing can be to hide the imperfection.

Still, however, we are to observe to the student, that it is much more worthy his art to avoid imperfections than to conceal them: that columns are in his choice which are elegant even in their plainest form; and that there is no doubt which he is to chuse, when left to himself on this occasion. When the pleasure of the proprietor interferes, he must conduct himself according to the rules we have here laid down, which will soften the harshness of the pilaster.



A Door of the Corinthian Order.

Pl: 64.



C H A P. XII.

Of the use of the CORINTHIAN order in a door.

THIS rich and elegant order may be employed equally to the decoration of the great door of a house, or to the door of an inner room of state. The design we subjoin in *Plate LXIV*, may answer either of those purposes: and it is very finely executed in the outer door of the town-house, which makes the last subject in our third book, and is illustrated by figure *LXI*. The student will by that know to what kind of edifice such a door is properly adapted. It there ranges very happily with the *Corinthian* colonnade on each side, and is no indifferent means of connecting that elegant part to the edifice; whose ornaments in general are, in the front, below rather than equal to, that fine addition.

In the design we have given in this plate, the student will see how elegant a door is to be constructed upon this order, with the most strict adherence to rule. The proportions in that figure are exactly after the established rules of *Palladio*; and, as we have told him on other occasions, having that before him as a standard, he will be able freely and easily to vary in many respects, in order to adapt the door to the house, to suit it to the other ornaments, or to fit it for an inner instead of an outer one.

In the making an inner door for a room of state, the proportions may be observed in every part exactly as in this, and the same capital used; yet there may be a great air of elegance and lightness given to the whole by fluting the columns.

When they are fluted they will also, if he please to introduce it, suit a lighter capital than this: we have given him choice under the article of the *CORINTHIAN ORDER*.

With regard to the fluting, we have before laid down the various methods in which it may be done; and have mentioned the use of cablings in the flutings, which is to prevent accidents and injuries to the tender edges of the lists between the hollows. A door case is not out of the way of accidents, and therefore it will be very proper to cable the flutings to a certain height. This will preserve the edges, and it will give a diversity to the aspect of the column; which, in a place where it is altogether ornamental, will have a good effect. The hollow of the flutes in the upper part always looks the lighter for this filling of them underneath; and there is no way in which the *Corinthian* order better becomes an inside door. On the outside we altogether prefer the plain shaft, as it is represented under this instance in the figure.

A COMPLETE BODY

C H A P. XIII.

Of a door of the Composite order.

THE student retains in his mind the characters of these two orders, the *Corinthian* and the *Composite*; and from them he will be able to judge, in general, of the work to be bestowed upon those doors in which they are used, and the manner of performing it.

As the *Corinthian* is the lightest of the orders, all the work that is employed in forming and decorating the part in which it is used, must be also light and shewy.

Now with respect to the *Composite*, as the character of that order is abundance of ornament, the same must be observed in every thing about it. Every part of the order itself must be decorated, and there should be no plainness in any part of the door-case into which it is introduced.

We have given a design of a door in which this order is used: in this we have decorated some of the parts; and by this have pointed out to him what in general should be done in the others; leaving some parts vacant that they may be decorated according to his fancy, and to the rules we shall lay down in a succeeding chapter.

When we speak of decorating the *Composite* order so lavishly on this occasion, the student will naturally think of its pedestal. This always adds to its air of elegance, and the appropriated kind is in itself very graceful; but it is not to be used here. The ornaments tho' numerous, must be appropriated not only to the order, but to the present use of it; and a pedestal to a column in such a door-case is improper.

We are sensible there may be quoted instances, under the authority of great names, to contradict what we have said; but the reader is to remember what we have often observed, that the greatest are not above error: and that the judgment of the professor of this science is no where so strictly employed as in selecting from among the works of these eminent persons, what parts they are which are excellent and worthy to be copied, and which they that should be avoided. There are none above faults, nor are any errors so dangerous as those which are so supported that they might become examples.

A pedestal to a *Composite* column, when placed in a series out of the reach of danger, and meant only for ornament, is a very fine addition in respect of elegance; but a pedestal to any column placed by a door of this kind is wrong. It breaks in upon an aperture whose outline should be perpendicular and uninterrupted; and as the height of the door cannot be very great, this pedestal occupying the lower part to so much of the height, makes the column necessarily short, and consequently too small for either dignity or true proportion.

The



A Door of the Composite Order -



The base of the *Composite* in this use, may be either the *Attic*, or that which is proper to the order. But though the proper base of the *Composite* be more elegant, yet we recommend the other; its truth and just proportion render it always satisfactory to the eye; and the small parts of the proper kind put it too much in the way of being broken. Chap. 13

The shaft of the *Composite* in this case should be fluted, that being of a character with the rest of the work; and its dimensions in general are to be those of *Palladio*.

We have given them correctly in the design annexed: and the reader, turning to those chapters wherein we have treated of this order, will see ample sources of variation; and will know what may be done, and how it may be authorized, in this kind of work.

C H A P. XIV.

Of decorating the orders for doors.

THE richness of an order depends upon its natural form; but a great deal may be done in the article of improvement in elegance, by the materials that are employed, and by the additions of sculpture.

No absolute direction can be given in this respect, for the expence of the different kinds is so various, that the choice of the proprietor alone can be consulted.

We may consider the materials for the orders intended for this use to be, in *England*, three; wood, stone, and marble: for brick columns should never be thought of for a door-case; and we have not arrived at those of metal.

Of these three wood is by much the most universal. It is the cheapest in itself; it is sufficiently lasting and it receives the chissel freely, and retains its smallest strokes very safely. Therefore this is to be considered as the natural material in *England*, and it serves equally well either for the outside doors or those within.

Stone has an air of grandeur which wood has not; nor can any painting or any artifice give it: but this is naturally limited to the outside door.

Marble has, with a much greater dignity, a noble and peculiar elegance. It serves equally within doors and without; but the weight of this and stone should confine them within the ground floor, unless very good care be taken for supporting them at a greater height.

We have instances of enriching even marble columns, by placing upon them, in the *Corinthian* order, capitals of brass; but this is an unnatural and foolish addition. The colours of the brass and the marble are so different, they never can agree one with another as two parts of an entire body; and the marble itself bears to be wrought with all the needful rafflings, and shews them very happily.

This

Book IV. This addition of brafs therefore we wholly reject : it is expensive, unnatural, and unbecoming. Those who have used it have been led into it by the practice of others, the reasons of which they did not observe. Such as have been at the expence of granite *Corinthian* columns on some occasions have added capitals of gilded brafs ; and the whole has been admired together by those who did not know where elegance had been consulted, and where necessity. The reason of casting the capitals in brafs was because we have not tools to cut them in the granite : but in this case it would have been better to have wrought this fine material into columns of an inferior order, as the *Doric*, where the capital being plain, the whole might have been uniform and of a piece ; for undoubtedly the same tools, and the same hands, properly directed, which could round the column, could also form the capital of this plain though noble order.

These are the ways in which a door-case of the orders may be enriched, if the possessor please, by the nature of the materials ; but as there is at best more expence than taste in such a way of adding grandeur to a work, we shall advise the proprietor on the contrary to immortalize his own taste, and encourage the fine arts by giving this elegance from the stores of sculpture.

We have in *England* now some who, with proper support and encouragement would, I am confident from their performances, rival the rest of *Europe* ; and perhaps would stand the comparison with many celebrated in antiquity, if any were to be found who would pay the price of their labour.

We may be assured that none of those pieces of sculpture we admire were done in haste : nor can they ever be equalled but by those who have encouragement as well as genius.

There is no part of an edifice in which sculpture can be so happily employed as about a door-case : every eye perceives it ; and it does not infer a necessity of continuing the same work throughout the house : for a door is a detached piece ; it always is understood to be such ; and it is expected to be ornamented.

We see in many instances a great deal of idle labour in this way employed upon door-cases ; but it is rude, harsh, and unfinished. It is better one good piece, though small, should stand in some conspicuous part alone, than that all this scattered indifferent work should glare without approbation. A single festoon and basket, such as we have represented over the door of our *Composite* order, well executed, is preferable to a million of eggs and anchors rolled along all the mouldings.

If our painters want genius to give designs in this kind, the treasures of antiquity are inexhaustible ; and our frugal ancestors, like ourselves, have made so little use of them that they are new.

What a variety of decoration might the ingenious sculptor adopt from the ruins of *Palmyra* ? How bold and noble are the bas reliefs of the *Partbenion* ? Indeed what is there of the ornamented kind, among all that is left us of antiquity, where various lessons may not be found under this head ? Which of all their works do not afford hints for the sculptor of genius to follow ; and, for the more modest and diffident hand, subjects to copy and introduce into his present works.

While we prefer the enriching our door-cases by the hand of art to the more expen- Chap. 14
sive treasures that are to be had from nature, we must observe that some regard should be paid to each. The materials should be adapted to the workmanship: for it would be pity to bestow labour and genius upon such materials as would disgrace them; or upon such as would not long enough support themselves against the force of accidents. We know stone moulders quickly when exposed to the air; therefore when a very elegant door-case is intended for the outside, the proprietor should not grudge the use of marble. It will not only receive the finer touches of the tool more favourably, but better become them, and preserve them longer.

In the same manner with regard to the door-cases for rooms in which these orders shall be admitted, the choice naturally falls upon wood; but there is as much difference between wood and wood, as between stone and marble. Our fathers worked in oak, a wood unfavourable to the tool, but which, in their masterly hands, admitted every stroke, and repayed the toil with immortality: we now use fir, the weakest, worst, and poorest of all woods that could have been employed for this purpose; and we can give for this but two reasons equally mean, and unworthy people who affect to have genius, or to encourage it; these are that it comes cheap, and cuts easy.

It will not admit those delicate strokes which have eternalized the chisels of our fathers; nor support itself in those tender parts into which they cut their fine works. We have the same materials in which they wrought, and not one kind, but many, of wood that will be very useful for the purpose. The pear-tree is famous, and the maple more; this last was known in the earliest time of which we have account, and celebrated for its excellence for this purpose; what then is the reason our people do not use them? they cut as freely as deal, and they are not nearly so liable to break off in pieces to the discredit of the work.

It is not needful the whole door-case should be made of such wood; no not the whole columns: let those who calculate expence so nicely, save in these articles, and only make the pieces of this wood that are for sculpture, the capital of a column, the ornaments of a freeze, or the like. The difference of colour, to us who cover all with paint is nothing; and the work would shew in a finer manner, and would be much more lasting.

One caution also we shall give the architect in this case; which is, that he cause a careful and judicious painter to be employed where there is carved work: for the nicest strokes of the chisel will be lost if clumsily covered with paint.

Two things are essential to be considered in the painting of carved work; the first is, to use such a colour as shall cover the work without clogging it; and the other is to lay it on in such a manner that it shall not need a speedy retouching. There may easily be contrived for this purpose a paint of a thinner body than ordinary, which will colour without loading; and we know how poor an appearance the best piece of sculpture in wood makes when it has been two or three times painted.

It is partly the badness of the work, and partly the destruction of it by frequent colouring, which has put carving so much as it is out of use at present.

Indeed it is now threatened to be utterly turned out of doors: and while the professors of the art submit to the comparison, they scarce deserve pity. The old deception

Book IV. of stamp paper, instead of carved wood, is coming up with all the rage of fashion: what the *Goths* hid at the tops of their highest arches is brought down to the level of the eye with us; and we bear it, and approve it.

Our sculptors need do no more to banish this innovation than to oppose their work well executed against it; for there is no eye but will perceive the difference: the cleanness and sharpness which follows the chisel can never be equalled by such contrivances, nor the stucco, when a tolerable hand fashions it.

The age is growing at once frugal and magnificent, not seeing the two things are incompatible.

They are great in their designs, and they content themselves with the poorest execution of them. The judicious architect will tell them that the plainest moderate-sized room, finished in a workmanlike manner, is preferable to the largest defaced by these poor ornaments; and that it is better to have a *Doric* door-case of wood, than a *Corinthian* or *Composite* of paper.

C H A P. XV.

Of the pannels of Doors.

WE have now considered the ornaments: we have explained to the student what he is to undertake, and in what manner to execute the great concern of the decoration of door-cases, whether in the plain and common manner, or, with the highest grace the science affords for them, the orders of architecture. We have considered also the opening, and its dimensions and form; and all that remains is to treat of the door itself which is to close that aperture, and to occupy the centre of the proposed decoration.

The door must be of due thickness to prevent its warping; and that must be farther secured also by its being made of seasoned timber, and framed in pannels. With respect to the kind of timber, notwithstanding the great variety our own country affords, that is reduced in a manner to two, oak and fir; against the first nothing can be objected, for it has both strength and beauty; but the other is inferior to many kinds of our own growth.

The oak or wainscot doors are appropriated to the better kind of buildings, and are intended to shew their true surface and their natural colour. These are often wrought with a great deal of beauty, and are an ornament in themselves exclusive of the decorations.

The fir or deal doors are meant to be painted. They are most common in houses of least expence; and when they get into better edifices they are so well framed and wrought that they often make no bad appearance.

The advantage of these is their lightness; those of wainscot, of the same dimensions and diameter, being much heavier.

Beside the wainscot, we see in some places inside doors of great elegance and expence, wrought of mahogany, or inlaid with rose-wood, and decorated with sculpture. Either

ther of these kinds are very elegant; and those who have been familiar with them, Chap. 15. will not approve a painted door in an elegant apartment.

The opening of the door is next to fall under consideration, and the common architect will think that he has no more choice than to place the hinges on one or the other side, so that it may open one way or the other, inwards or outwards: for one of these two ways he will suppose every door in the world must open. We shall tell him no.

There is a way different from either of these, and it is a method of extreme elegance.

A street door opening inward is of no inconvenience, because it opens into a hall, which is a room of no consequence; but this is not the case in the more elegant apartments, where the communication is by a door in the partition wall, and the entrance immediately out of one room into another.

We will suppose the two principal rooms upon a first floor communicate by a door in the centre of the partition. In an evening, when they are lighted up, this door is thrown open, and the furniture in both being alike, it becomes as one apartment. In this case the door, according to the modern custom, must open into one or into the other of the rooms, and into whichever of the two it is, it will there be a blemish; an awkward slanting piece, standing in the room with a disagreeable sharp angle.

This may be prevented by making a cavity somewhat more than equal to the depth and substance of the door in the thickness of the wall. Into this the door may slide by a gentle touch, and remain undiscovered; and a handsome brass ring being fixed to the edge, it may come out again when it is to be shut with as slight a motion. This is done at the house late Mr. *De Pyltres*, near *Hanover* square, and the manner of it there may serve as an example to other builders.

The opening, in the usual way, is either by the whole door on one side, or by half of it each way, the door being composed of two folding in the middle; but in either case it is not comparable to the method we have here proposed of sliding it into the wall on many occasions.

Last of all we come to the structure of the fabric of the door itself: this should be contrived for strength, beauty, and straitness. All these purposes are answered by making it in many pannels. The folding, or half doors, are best made of four pannels, two larger, and two smaller; and the entire door of eight. The framing must be found, and the joints well secured. They may be varied in form many ways: but to be minute in these things shews a poorness of genius in the architect.

The best form of the pannels is the plainest, and this is a long square; the two or four larger should be long upwards, and the other cross-wise. This is a construction that shews strength and firmness, and this is all that should be consulted here, the decoration belonging to the other parts.

Of the several kinds of windows.

HAVING gone through the consideration of doors, we are naturally led to that of windows; the apertures most of their species, and capable of the same kind and degrees of variation. Their number and their nature we have considered already, as also their places, and their proportion to the building. These are things we shall not repeat; the student who has read the preceding part of our work with care, has them in his remembrance; and he may therefore now be led to the article of their decorations.

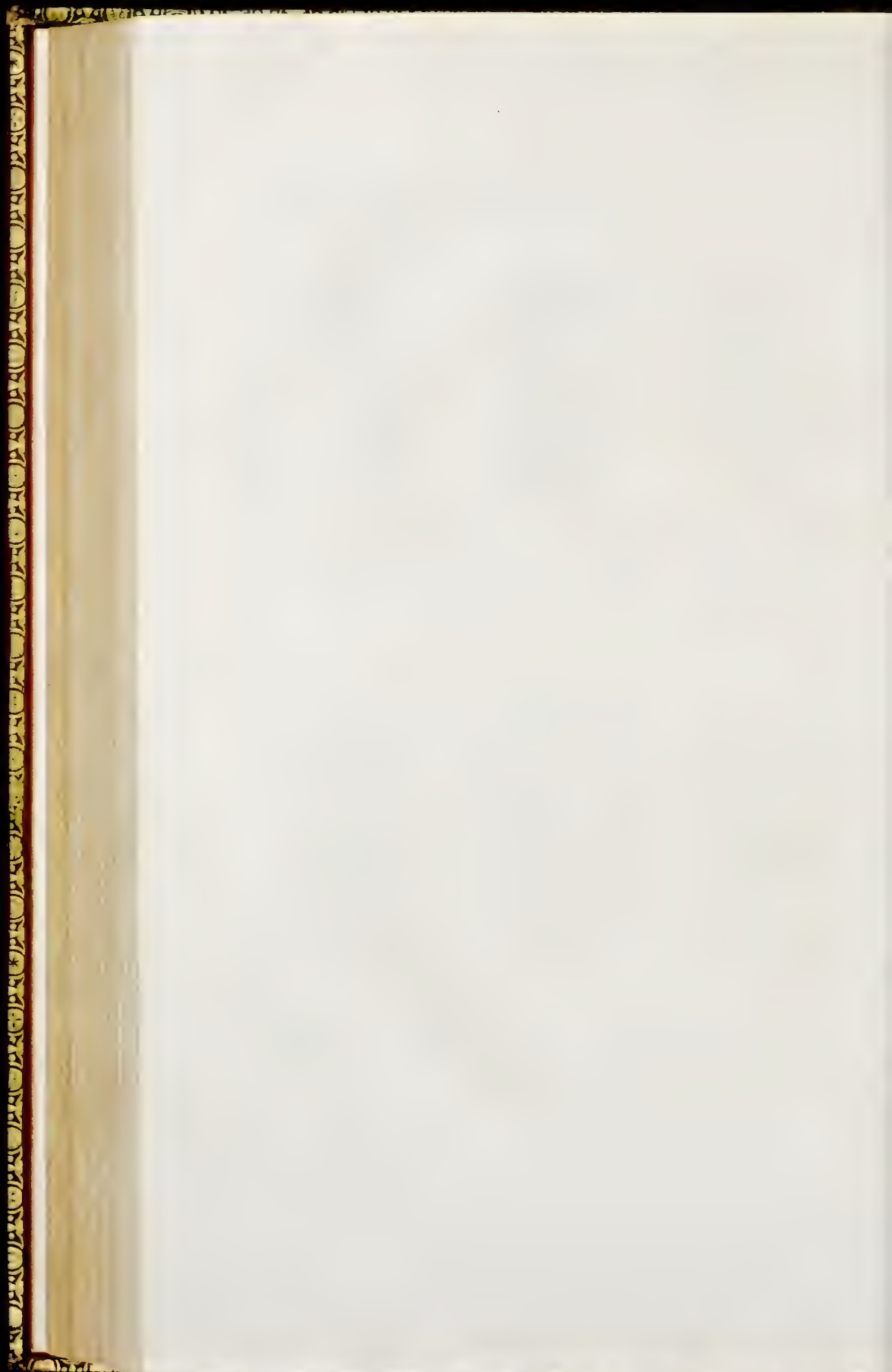
They are a very essential part in the elevation of a building: therefore, in order to be understood in what we shall particularly say of the several kinds, we shall here lay before him in figures, and a general detail of their several forms and parts, as well as ornaments.

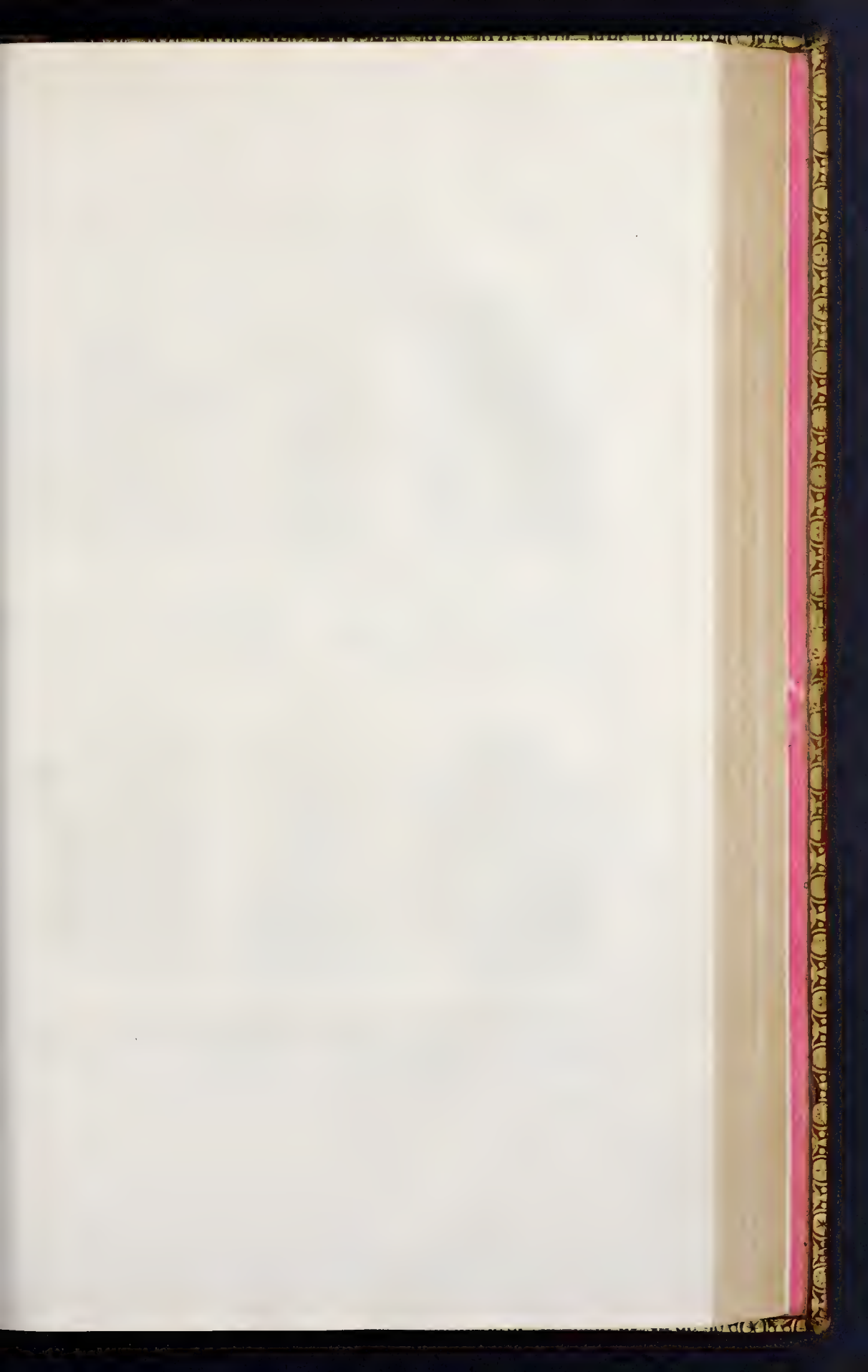
The best windows are to be the ornament of the principal story in all great buildings: and that the architect may see at one view the great variety that is in his power, we have represented in *Plates LXVI and LXVII* here annexed, a variety of forms; beginning with the plainer, and advancing to the more richly ornamented.

The heights of windows for this principal story are to be proportioned to their breadths. The student will see, by the several figures, that we allow, as the most general proportion in plain windows, twice the measure of the aperture in breadth for its height; and he is to know that he need not be tied down to this with so much strictness, but that twice and one sixth may be allowed without violence to true proportion. This is the more proper, the richer are the ornaments; and he will see it reduced to practice in the *Composite* window in *Plate LXVII*.

The *Venetian* window is a very noble and ornamental kind: it admits a peculiar proportion; the measure of which the figures here represent; and of the reasons for it we shall speak in a succeeding chapter.









THESE are the several kinds of windows, speaking in general, that are proper for a principal story: but there are others for the upper and middle apartments. Chap. 17.

The height of the rooms enters here into consideration, and as these are lower in the chamber-floor than in that below, the windows should also be lower; therefore, instead of twice the breadth for height, the best measure for these is the diagonal, which is once and a half the breadth; this is what the builders express by the name of a diagonal window.

The *Attic* story should have the windows square, as we have directed already; and this is founded on the same principle in reason, which is the lowness of those rooms. And finally, there are to be considered the mezzanine floors. In these the best measure is to give the windows three quarters of their breadth in height. This, like the former proportion, is suited to use, and proportioned to the height of the rooms; and the builder may be assured all that is thus proportioned will be right.

C H A P. XVII.

Of the plainer windows for a principal floor.

IN ordinary houses the window may be like the original door; no more than an opening of a proper measure in the wall: what this measure should be we have shewn, and no more is therefore needful on that head: we come to the ornaments that should be bestowed on it in elegant buildings.

The least that should be allowed the windows of the principal story in such buildings, is the ornament of architrave, freeze, and cornice.

Builders indulge their fancy in these parts, and are very fond of confounding, under the name of improvement: they put together parts of the proper cornice, and other divisions belonging to the distinct orders, and these they call composed ornaments.

There requires much more knowledge of the science than usually falls to the lot of these people, to mend the parts of an order; and we shall recommend them to be more prudent, and chuse one as they find it. The *Ionic* is of a middle nature, and answers very happily; and if they use the swelling or rounded freeze, it will add to the grace of it.

In such a window the cornice terminates the whole; and as no more decoration is allowed at the top, there should be a proportioned decency observed at the bottom. This window will appear best when supported on a plain pedestal, and none so proper for the use as that which belongs to the *Ionic* order.

Thus all will be proportioned, natural, and of a piece; and the window will have a simple elegance very becoming. Such a window is represented in the first figure of *Plate LXVI*.

We will suppose that upon the architect's presenting such a design, the proprietor thinks it not enough ornamented; he is to consider in what manner to add decorations. They are of many kinds and the richest of them call in the use of the orders: but be-

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Book IV. fore he arrives at these, which are always expensive, and which suit only elegant edifices, he has a great deal in his way. A pediment may be added to the top; but then let him take care that he, in a proportioned manner, enrich the bottom.

Without this addition, which gives a height not always eligible, the architrave may be enriched by sculpture of some of its mouldings; and in this case, as in the other, the principal care must be to enrich every part in a proportioned manner.

Beside this addition of one ornament to answer another, there must, in this particular case of adding a pediment, be a consideration of the height and measure.

Whatever adds to the height of a window apparently diminishes its real breadth, and really diminishes its proportional. The height and breadth in ornaments must be now considered as strictly as we have before proportioned it in the aperture; the pedestal must be extended to a proper breadth, and there must be a continuation each way to the architrave.

The breadth being suited to the height, the ornaments come next into consideration. The pediment may, at the pleasure of the designer, be either pointed or circular; and where there are several windows in a range thus ornamented, the common practice is to make them alternately round and pointed. This is supported on sufficient authority, tho' it might be liable to the cavils of strict rule.

In no case let the pediment be broken, or open at the top. This, tho' sometimes practised, can never be justified. Some who have seen pediments broken in the inside finishings of rooms, to admit a bust, or other ornament, have transferred the practice to the tops of windows; not regarding that they were without.

In the finishing of rooms fancy must be allowed its liberties; and there is nothing in that use of the broken pediment which contradicts reason; but when we see it on the outside of a house the eye is disgusted. The pediment has its use, which is to throw off the water; and in these cases the architect seems to have opened it purposely to let it in. This is destroying the use of a thing, under the notion of beautifying it; a practice reason abhors.

The pediment may seem supported by a scroll; and this, tho' of no real use, yet has an appearance of it, and adds to the gracefulness of the whole.

This being adjusted, the upper part is finished; and we may therefore return to the pedestal. Its encase in breadth we have named; but that, unless some farther care be employed about it, instead of adding to the decoration, will make it appear plainer by shewing more of the die.

Therefore to suit it to the rest, let there be added a balustrade of the breadth of the aperture. This will give an air to the bottom proportioned to the top, and the whole will be not only elegant but uniform. Such a window will be seen in the second figure of *Plate LXXVI*.

Last among the decoration of windows, without the addition of the orders, we are to consider the effect of sculpture in the mouldings; in our first instance we meant to represent the plainest of these kind of decorations, and in such a one sculpture could find no place. In our second design the addition of a pediment with its scrolls render

any other kind of decoration needles; and it is therefore in a third kind we are to examine its use. Chap. 18.

We will suppose the proprietor thinks our first window too plain, and our second with its pediment too heavy: he is not willing to admit the orders, and he requires a richer ornament. The purpose must therefore be to make a light and elegant window: this is the proper use and design of sculpture on the present occasion.

The contour of our first design was plain, and the outline of the architrave perpendicular; this gave it the air of simplicity which we intended as its character: in this, which is to be more ornamented, let the outline swell gracefully at the bottom, and project in a square form at the top: this gives that uneven line which is essential to beauty; and if a row of sculptured ornament be carried round the edge, there is a very decent and pretty addition.

To receive this swelling in breadth at the bottom, the pedestal must be extended; and, to suit this to the whole, there must be a balustrade as in the other case. Thus will rise a beautiful and light window, proportioned and uniform. A design of such a one we have given in the third figure of *Plate LXVI.* beforementioned.

C H A P. XVIII.

Of windows with the orders.

WE have thus carried the decoration of windows without columns as far as it ought ever to go: whoever is not content with this degree of ornament without them, should not think of adding to it in the same way, but should altogether lay aside his first plan and admit them. This is correspondent to what we have said on the subject of doors; and the rule is universal, that when a certain degree of ornament, without the use of columns, will not give satisfaction, then farther ornament of the same kind is not to be sought exclusive of them, but they are to be admitted.

Thus, in the present case, if the plain decorations of architrave freeze and cornice, the addition of the pediment, or the ornaments of sculpture, do not give satisfaction, let no false foolish and fantastic decorations be added, but at once admit an order. We shall consider first the plainest, and afterwards the more rich, in this employment.

The orders here, as with respect to doors, are properly reduced to four, for the *Tuscan* should have no place. The *Doric* is the plainest that should be used, and we shall begin with the adding it to a simple window.

C H A P. XIX.

Of the use of the DORIC order in a simple window.

TO understand what we propose in the addition of the *Doric* order to a plain window, let the student turn to the designs we have just mentioned as represented in our figures. These are the three most graceful forms of plain windows, and he will easily determine to which of these, in the general idea, the *Doric* order may be added; or, in more proper terms, which it is of these from which, with the addition of an order, the most graceful window may be formed.

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Not from the first, because its narrow ornaments give no room for columns; not to the third, because the outline is not suited to the upright position of them; and its carved work would be obscured and buried by them: therefore the second figure gives the best general form for the combination with an order. There is in that a proportioned breadth and a majestic plainness; and there is a good pedestal for the columns to rest upon. Let the reader understand this properly: we do not mean that, in order to make a *Doric* window, he is to add columns to that exact figure; but, as these columns are an additional ornament, there should be the idea of a plan formed for them, and it should be something in this kind.

Therefore let him entertain this notion of the general form, and upon that proceed to the work: let the window be of a sufficient breadth, and the columns terminate the outline on each side; and, for two reasons, let there be a pediment at the top: it serves to make the height proportioned to the breadth, and it gives the columns something to support.

This being determined, nothing remains but to execute the plain order in its true proportions, and with its proper ornaments.

We have advised the student never to think of a pedestal to any column placed at a common door; but here, whatever the order be that is raised, a pedestal is a natural and proper part.

The window is, and must be supported to a certain height above the fascia on the outside, which answers to the floor within. This support is naturally a pedestal of the breadth of the window and its ornaments.

In this case, where the window receives so much decoration, the pedestal must also have its ornaments: these, we have shewn, naturally are a balustrade of the breadth of the aperture; and this, being terminated on each side by a plain piece of the breadth of the window-case, leaves just a proportion on each side for the real and proper pedestal of the column. This is a very obvious use of it; no one could think of putting it to any other, and all that we can add is, that as the *Doric* is the order here employed, this pedestal must be the proper one for the order, as we have explained under that head.

This pedestal must terminate in its height exactly at the level at the bottom of the window, and upon this must be raised the column with its base.

The student has his choice of different bases for this order, all established by great example, or authority, as we have shewn; but in this case there is none so proper as the *Attic*. We shall propose the columns to be erected in all the noble simplicity of their plainness, and this base has in it a purity and dignity which happily became that purpose.

The base being set on its plinth, and finished in its proper measures, let the shaft be raised to its true proportion; its height must be that of the aperture of the window, and it must have its exact diminution. The plain case between the outer edge of the aperture and the column, will, in this case, shew its natural diminution in a very perfect and very happy manner.

The capital must be that of *Palladio*; and the neck may, at the pleasure of the sculptor, be either plain, or decorated with roses. But of this we shall presently speak farther; for tho' the choice is left to fancy, all should be uniform, and therefore there are cases in which the judgment should direct him to the one, and others in which it should guide him to the other.

The architrave being supported immediately upon the capital, over that comes the freeze; as to the first, the architect has nothing to do but conform exactly to rules, and make it as directed under the head of the *Doric* order: but in the freeze he has three choices. It may be left entirely plain, or it may be ornamented with its triglyphs; or, finally, there may be decorations in the metopes or spaces between.

This gives a considerable variation in the article of expence; therefore a design in each way should be laid before the proprietor, that he may make his own choice.

The leaving the freeze of the *Doric* plain is wrong; for the triglyphs are considered by all true judges as an essential part of the order. It gives the *Doric* an air of *Tuscan* when they are left out, and he must have an ill taste who desires to reduce the appearance of a superior to that of an inferior order; or who would make the *Doric*, which is very proper on these occasions, represent the *Tuscan*, which is unworthy the office. Therefore, tho' custom allows the choice of these three methods of constructing a *Doric* window, judgment ought to reduce them to two. The plain freeze should be rejected as improper for the order; and it remains to add the triglyphs and leave the metopes plain, or to add figures, or pieces of sculpture, in those spaces.

In this the proprietor is the only proper judge, but the addition of sculpture in the metopes is always worth the expence.

On the determination of this point depends the lesser article concerning the neck of the column; and the rule should be this. If the order be constructed with the metopes plain, the neck should be plain also: but if there be ornaments in the metopes, there should be roses in the neck.

Over the freeze rises the cornice, and this is crowned by the pediment: thus is constructed the *Doric* window in its plainest form, and thus we have represented it *Plate LXVI. Fig. 4.*

C H A P. XX.

Of the projection of the columns in a plain DORIC window.

THERE yet remains a particular concerning the columns in this kind of window, which demands a distinct and separate consideration. The common architect supposes the degree of their projection to be left wholly to fancy; and he never examines it by any other law: but let the student whom we lead to the regular principles of the science, consider what are called the least things distinctly; he will often find them not so little as imagined, and this is one instance.

We have observed before, that the more a column stands out, the more graceful it appears; and it is an undoubted truth, that it never looks perfectly well, but when entirely free of the wall.

A COMPLETE BODY

To make this *Doric* window with its full degree of beauty, the columns should therefore project their whole diameter upon the quoins. This will not only give an air of freedom and dignity to the column itself, but it will be a means of disposing the triglyphs much more happily than they possibly can be managed in any other degree of projection.

Thus when the projection is of the whole diameter, the triglyph will stand in the return exactly in the same manner as in front, over the columns. This will give great propriety and beauty: and, by projecting three fourths next the aperture, the triglyph shews also its whole figure there in the return.

By this method, no part of the triglyph, or of the metope, will be broke in the angle. This is a point to be considered very exactly by the architect who knows the depth of the science.

C H A P. XXI.

Of executing an IONIC window plain.

FROM the *Doric*, the plainest order that should ever be employed about a window, the next advance is to the *Ionic*: and if the design of such a window as we have given do not answer the proprietor's intent of richness, let nothing be added farther than the decoration of the metopes; that not being sufficient, the advance should be to a superior order.

The *Ionic* offers next, and is secure of great beauty. This the architect must consider as an advance in ornament; and he should rise modestly in the additional decorations.

With respect to the pedestal, let the balustrade lie as in the other instance: let the proper pedestal for the columns be that appropriated to the order to which they belong; and let some breadth be added beyond it on each side by way of grace.

In the *Doric* window the outsidings of the columns terminated the outline of the whole, but in the use of the *Ionic* there will be a great deal of beauty added by placing a seeming pilaster behind each column. The capital of the pilaster, (the order being the same, and the construction also the same,) will agree very happily with that of the column; and this gives a breadth of the supposed pilaster also, beyond the outside of the column, in the outline on each side of the window.

This shews the necessity of an increased breadth in the general pedestal at the bottom of the window; and this addition on each side is to be wrought as the proper pedestal of the pilaster, and will in that way perfectly agree with the rest, and give a great deal of beauty.

With respect to the construction of the order for this use, we by all means recommend the shaft to be plain, and the capital the ancient *Ionic*. Great variety may be given by introducing those several variations which we have shewn the student may be used, when we treated of the *Ionic* order; but in this instance we propose it in the plainest form, and it will be found by no means deficient in beauty. We shall advise the use of the swelling freeze on this occasion, and the covering it with a circular or arched pediment, in which the modillions of the cornice will correspond with the general form of the rest, and give a very sedate and pleasing aspect to the whole. A

A design of an *Ionic* window thus constructed will be seen in *Plate LXVI, Fig. 6.* Chap. 22. and its several ornaments will no less happily correspond with one another in the working, than they do there upon the paper, to make a beautiful regular and well-proportioned whole.

C H A P. XXII.

Of constructing a plain window in the CORINTHIAN and COMPOSITE order.

WE have yet to consider the manner of using the elegant and rich orders in this purpose of decorating windows; but what may be needful to be laid before the student on these heads, will be comprised in the fewer words, as we have at large explained the same principles in the two already mentioned.

The *Composite* may be supposed to rise in decoration above the *Corinthian*, as the *Ionic* above the *Doric*; and upon this single thought will depend the general idea of a construction of a window, with the assistance of one or the other.

When the *Corinthian* is to be used, let the student turn his eye to what we have laid down respecting the *Doric*: the richness of the order need make, in this respect, no difference in the design. Let him raise the column to terminate the outline of the window on each side; let him support it on its pedestal, and finish it with its appropriated ornaments; and at the top raise a pointed pediment.

There should be a balustrade underneath to the breadth of the aperture; and some light but handsome carvings may be carried round the mouldings that encompass the aperture. This will agree with the proper sculpture in the *Corinthian* freeze; and thus there will be finished a proportioned and elegant window. We have represented such a one in a design in *Plate LXVII, Fig. 2.*

This will be in reality the most light and elegant of the two more enriched kinds: but as the *Composite* has naturally more decoration in the order, it must be proportioned to that throughout the whole. In the constructing a plain window of this kind, there should be put pilasters behind the columns; and this infers all that is needed in the difference of the construction. As the body of the pilaster spreads on each side behind and beyond the shaft of the column, the pedestal must, in the same manner and proportion, be continued beyond that of the column. This gives the additional breadth; and a pointed pediment is a proper finishing. A design of a *Composite* window upon these principles will be found in *Plate LXVII, Fig. 5.*

C H A P. XXIII.

Of VENETIAN windows.

WE have led the student now through the whole consideration of plain windows, with their ornaments; from the simplest and cheapest, to the richest and most expensive: and we are from these to advance to the *Venetian*, a kind calculated for shew, and very pompous in their nature; and, when executed with judgment, of extreme elegance. They may be made upon several plans, and all elegant; but their best forms are those we have represented in *Plates LXVI and LXVII.*

Book IV. The *Venetian* windows take their proportions from the middle aperture, whose height should always be twice and one half its breadth. Being divided into three parts, sometimes one of those three parts is found convenient for the side openings; but where a considerable body of light is wanting two must be given to the breadths of the side apertures.

It is a common practice, and a common error, to make the side openings one half of the middle; and this is attended with a great inconvenience in dividing the sash squares: the principal light should be divided into three parts for the squares, and the side light should be either one or two of those parts; but where a very large *Venetian* window is required, another proportion, different from these, may take place: let the middle void be divided into five parts, two of which give to each of the sides, and the squares will be all equal.

B O O K V.

OF INSIDE DECORATIONS.

HAVING finished the consideration of plans and elevations of edifices, and, as we hope, led the student in a practical manner, from the designing to the raising his fabrick in a proportioned manner, and dividing it for use and elegance into rooms, we now advance to the inside decorations.

These principally regard three articles; the sides, the ceiling, and the chimney. Under each of these heads we shall lay before him many new designs suited to various degrees of expence and elegance; we shall begin with the decorations of the sides; and, after some plainer and less expensive designs for this purpose, we shall lay before the curious eye some which do honour to the name of *Inigo Jones*, and to which, we flatter ourselves, the hand of Mr. *Fourdrinier* will do justice in the execution.

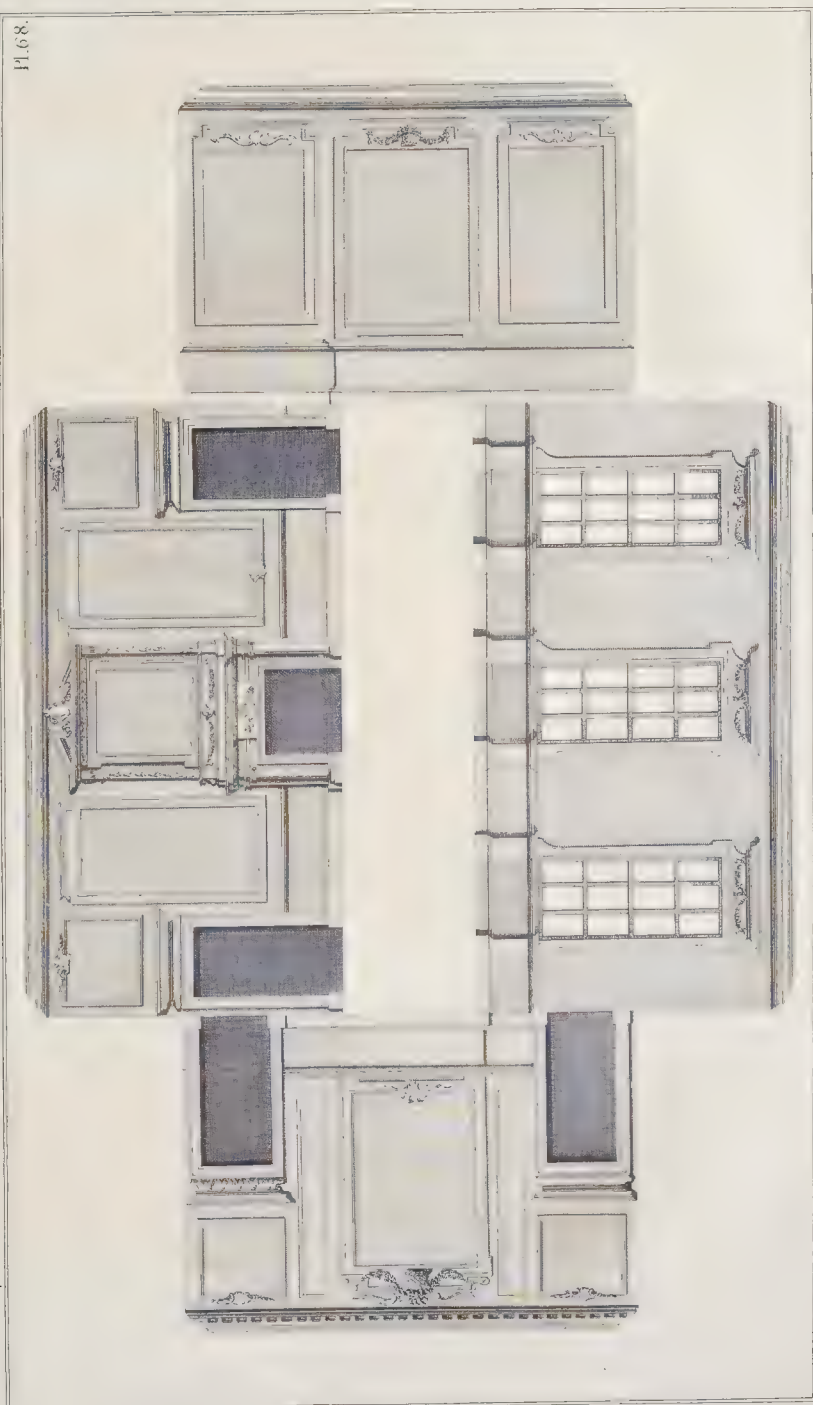
C H A P. I.

Of decorations for the sides of rooms in general.

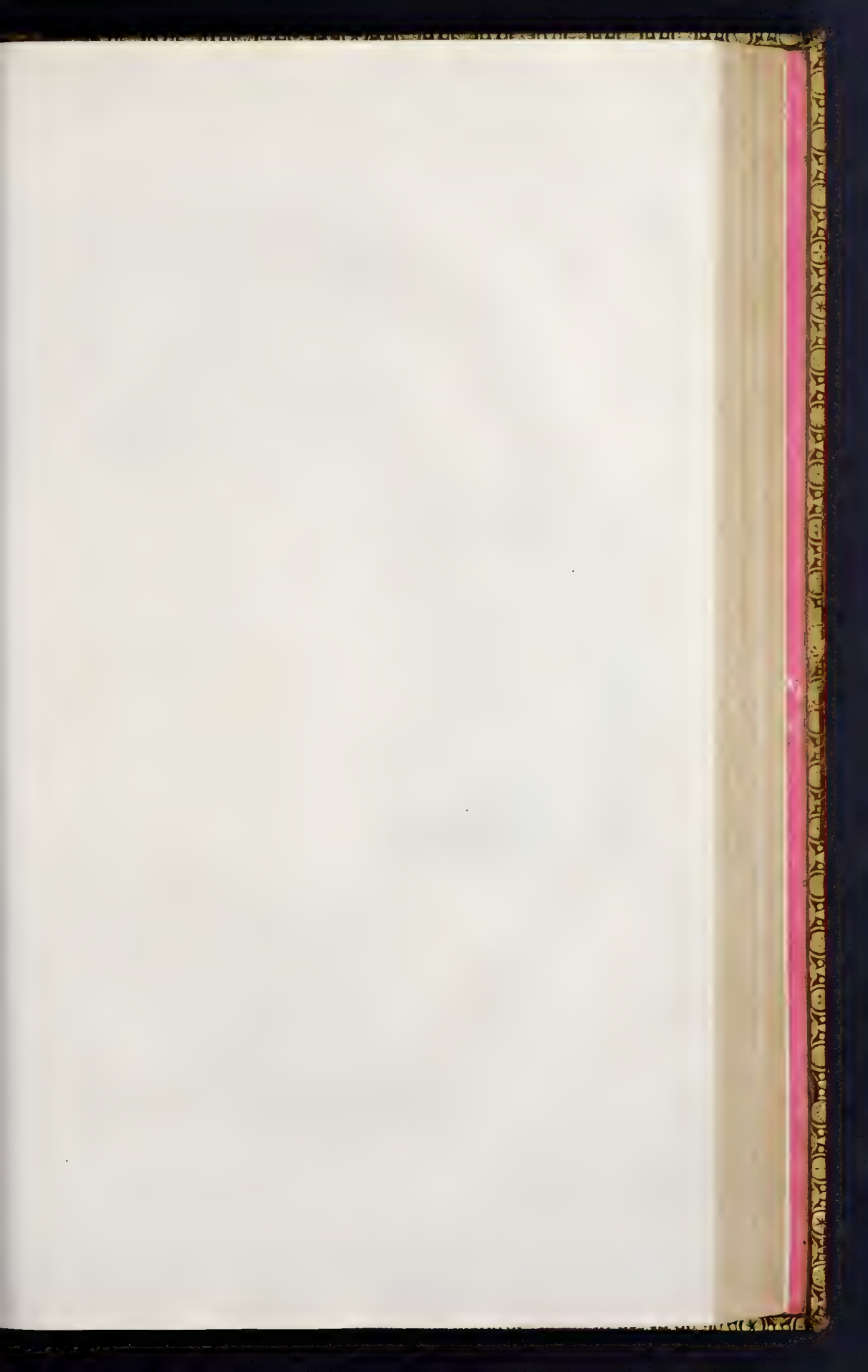
PAPER has, in a great measure, taken the place of sculpture upon this occasion; and the hand of art is banished from a part of the house in which it used to display itself very happily: but we flatter ourselves that a just representation of the superior excellence of the other, will restore to the sculptor this proper, and once great part of his province.

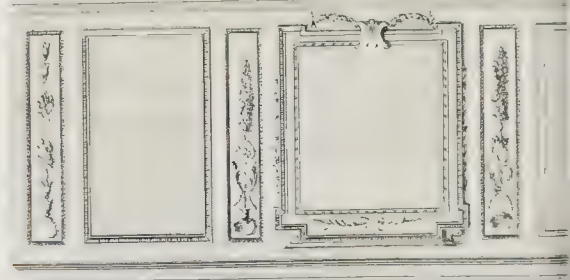
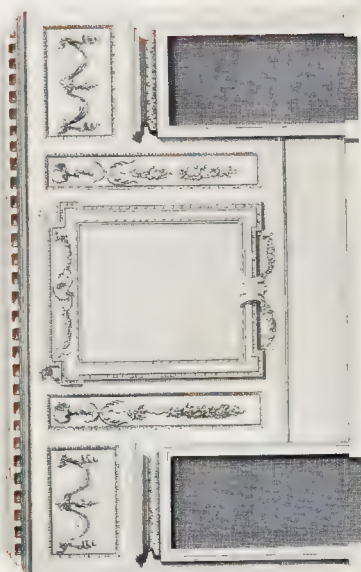
We shall, in this place lay before the reader two designs, the one plainer, the other somewhat more enrich'd; and when he has thus formed a general idea of the intent and purpose of this decoration, we shall proceed to an explanation of the several particular parts.

The









The decorations of the inside of rooms may be reduced to three kinds: first, those in which the wall itself is properly finished for elegance; that is where the materials of its last covering are of the finest kind, and it is wrought into ornaments plain or uncovered; secondly, where the walls are covered with wainscot; and thirdly, where they are hung; this last article comprehending paper, silk, tapestry and every other decoration of this kind.

In each of these methods, there is some advantage and some inconvenience. In general, the stucco rooms, which are those where the wall is left naked, but ornamented in itself, are cold; those wainscoted are naturally warmer; and those which are hung warmest.

The stucco room, when heated, becomes the hottest of all; and the wainscot hotter than the hung. These are general rules which may afford some direction in regard to the choice of either kind, for in each there are conveniences; and the prudent architect must consider that one sort is fittest for one sort of service, and another for another. Too often these things are left to fancy; but there is a method of conducting them with judgment.

After the consideration of heat comes that of light; and this ought to be as much regarded in chusing the kind of room best adapted to the place and purpose.

Other considerations being equal, a wainscoted room, painted in the usual way, is the lightest of all; the stucco is the next in this consideration, and the hung room the darkest.

This depends upon the plain principle that the most even surface will reflect most light; and this is seen by night as well as day: a room of the same dimensions, which, if wainscoted, will take six candles to light it, will in stucco require eight, and if hung ten.

For these reasons where the architect is consulted, let him give his motives for his particular choice: where the light is strongest, let him propose hanging, if he ever propose it at all; where it is fainter, stucco; and where it is least of all, wainscot. In the same manner let him conduct himself with regard to the consideration of heat: and his proprietor will then find, that he has to deal with a person who weighs every advantage, and understands that greatest of all articles, in this matter, the appropriation of ornaments.

Of the three kinds we have named, the grandest is that in stucco; the neatest that in wainscot; and the most gaudy that in hangings.

This will be a farther guide to the architect in his choice; for there are apartments in which dignity, others in which neatness, and others in which shew are to be consulted.

Book V. For a noble hall, nothing is so well as stucco ; for a parlour, wainscot seems properest ; and for the apartments of a lady, hangings.

All these are to be considered, we deliver them, as general rules, but by no means universal. There may be occasions to dispense with them frequently in practice ; and they may be so dispensed with without impropriety : but still, tho' not without exceptions, they are general rules ; and it is fit the young architect should be reminded of them. We judge this the more necessary, because we see them frequently violated without cause, by those who have not that plea of excuse : this consideration, we hope, may be a means of preventing it for the future.

C H A P. II.

Of the practice of the antients in decorating their rooms.

THERE is no article in the science of architecture, in which we may not receive instruction from the practice of the antients. They were the first and great inventors ; and we read in those remains which the malice of time has spared, every where lessons of improvement : the history of architecture has not been written by any ; but there are not wanting materials for such a work ; and these we shall employ here, as in the preceding researches.

In all the antient structures we see a dignity which is not so much as attempted in those from modern hands ; for our ambition runs in another channel. We sacrifice the noble to the pretty ; and had rather what we finish should be called fine than great.

The antients were of a contrary turn ; they admitted ornaments, but without luxury. They never indulged fancy at the expence of judgment, and they considered first the essential parts : they began with plainness, and they advanced to decoration.

The original inside finishing of a room was its wall, well covered with a plaister. This they made as fine as our stucco, tho' of other materials ; and the nature of the composition rendered it more durable.

Their covering was no other than mortar ; but it was mortar tempered with the labourer's sweat. They chose the finest and the soundest stones of the limey kind ; they burnt them with an exactness unknown to us ; and when they had selected the other ingredients as carefully, as they had prepared this, the mixture was blended in its minutest parts by repeated toil.

This we have treated of before, and refer to our first chapters for the particulars ; but it was by this repeated labour that the several parts became so united with one another, that the mortar was as if a natural substance.

Stones are formed of crystal and earth, or spar and earth; but nature's slow and careful operation blends them so that neither earth, nor spar, nor crystal appear; but a substance different from all, and seeming as original as either. Thus it was with the mortar that supplied the place of stucco for the antients. This they laid on while the walls were fresh; while the mortar which joined the stones, or other materials, was moist; and before the stones or bricks themselves were too much hardened.

They laid it on with the same patient industry that had been employed to make it; and thus uniting with the stone and with the mortar of the joints, it became one solid mass with them; at once a finishing of a room, and a part of a building.

These were the first coverings of the Greeks; thus rose the structures of *Hyperbius* at *Athens*, improvements of the rougher works of *Doxius*; and thus the antique practice formed itself. The walls were covered and made plain; and thus the fathers of our science first contented themselves: but while the succeeding geniuses directed ornaments without; while columns rose and porticos were formed, the inside could not be neglected.

C H A P. III.

Of the introduction of columns into rooms.

AS the stucco wall, if we may call it so, was the first invention, it admitted of the earliest improvements; columns, so graceful on the outside, were soon brought into the great apartments of magnificent buildings; and behind these the plain wall shewed ungracefully.

The antient eye never failed to see what was required for uniformity. The base and capital of the column, which at first shewed the flatness of the wall in so ill a light, pointed the general method of improvement.

The base of the column was continued round the room, at the same height in the wall, with a decent projection: this gave the whole a look of general resemblance. The columns were not stuck in the room, but connected with it; and the similarity of ornament was pleasing and satisfactory.

The entablature of the column was continued over the intercolumniation, and the whole series thus joined in a regular body. This filled the eye with satisfaction, when it looked from the inner part of the room upon the columns; but when it was cast upon the wall behind, all were again an unproportioned plainness.

The eye of an *Hermogenes* could not bear this, and the remedy was easy: the same course that had been followed in the lower was copied in the upper part of the room, and the whole entablature, being hung from the ceiling, was supported by a continued ornament resembling the capital of the order, whatsoever that was.

Thus

Book V. Thus *Epimenides* decorated the superb hall he built for the reception of the *Grecian* states; and thus were harmony and proportion at once observed, and parts introduced correspondent to the whole.

C H A P. IV.

Of the introduction of pedestals in the finishings of rooms.

FUTURE geniuses saw what might yet be added: and a different disposition of the columns gave origin to new decorations. The top and bottom of the wall being decorated the whole was understood to be sufficiently connected, while the sober *Doric* was the order used on this occasion: but when the *Ionic* came into its place more was required. The space between the ornaments, correspondent to the base and cornice, appeared too blank, and in the centre of each intercolumniation there was cut a nich, in which was placed some statues.

This added to the expence, but the improvement kept good pace with the charge. It is not easy to conceive what would be more elegant in a magnificent hall than screens of columns with their ornaments continued round the walls, and niches with statues in the centre of each intercolumniation.

Here stopped for some time the finishing of rooms of state; but an easy and natural addition followed. The chaste taste of the old *Greeks* did not admit the use of pedestals, but fancy quickly introduced them without doors; and they were then brought into these decorated apartments.

Wherever these were used the mouldings of their cap were continued in the same manner round the wall with their due projection.

C H A P. V.

The origin of the ornaments in plain rooms.

WE have traced to their origin the most elegant of the *Greek* ornaments in rooms; and having found by what degrees and what advances they were introduced and added in these magnificent apartments, we shall easily see how the like decorations were brought into plainer rooms; that is, such as had not the dignity of the column as a part of their embellishment.

Take away the columns and this was done.

The ornaments introduced upon the wall to make it correspond with the orders, were found in themselves very agreeable, and they were used without the columns.

This was the origin of the inside finishing of apartments: and to this it is necessary the architect always adhere. Chap. 5.

The antient builders soon brought the decorations of the more magnificent rooms into such as, though elegant, were in their nature of less dignity, and completed upon a less expensive plan. They understood an order duly proportioned to be a very good measure for the parts of the room; and having seen columns where they were, they carried them in their imagination where they were not; and formed the decoration of the plainer, just as they had done that of the more magnificent rooms. On the lower part of the plain wall they raised from the floor the base of a pedestal, which they continued all round; this was the first ornament: from this the wall was continued in its natural plainness to the height of the die of the pedestal; and there was raised the cap with its proper mouldings.

From hence the wall was again carried up plain to the upper part, where they allowed a cornice.

They did not in those rooms where there were no columns continue the whole resemblance of the capital and entablature, because that, although very proper for conformity where there was that kind of embellishment, yet in these plainer rooms, would have been too much: therefore the pedestal with its mouldings being continued round the lower part; the cornice of the entablature, answered it at the top, and thus were finished these their plain apartments.

This is the original idea of the inside finishing of a room; and this our builders retain, or should retain to this day; but, between the *Grecian* accuracy and their incorrectness, there are many degrees of error.

Those who devised this ornament for walls always proportioned the order to the height of the room; and adapted its several parts one to another. We now see a *Corinthian* cornice to a room whose pedestal is *Ionic*; and ornaments and liberty in the other parts: this is an idle transgression of the original practice; and we shall caution our student to avoid it with due care.

The general rule is this; that he first proportion the order to the room; and of these the *Ionic* is most generally to be recommended: after this let him take care that the cornice answer to the pedestal; and that both be executed with truth.

This gives a farther rule for his conduct: as the order is preserved in the several parts of the walls, nothing unworthy of its dignity should be admitted in the other decorations. The ornaments of sculpture are appropriated to no particular kind; therefore with a just taste they may be introduced any where; and the only rule is, that where most of this decoration is intended, the ornament of the walls be taken from a superior order.

Let this banish *French*, *Chinese*, and *Gothic* decoration, equally mean and frivolous, equally unworthy a place where the science is observed, and equally a disgrace to the taste of the proprietor. Let all be of a piece, and all will be proper.

C H A P. VI.

Of decorating the upper part of the wall.

G R E E C E introduced the use of the pedestal and cornice for an inside finishing; and in her plainer apartments this was all: in those which received the addition of columns, the use of statues placed in niches was added, to fill the whole, and give an equal grandeur to all the parts.

There remained a third kind of room beneath the dignity of the latter, and above the plainness of the former; and for this some new decoration was to be considered. Niches and their statues were reserved for halls with screens of columns; and there wanted something in the elegant apartments that should answer the purpose of those ornaments, in a lighter and less expensive manner.

Here came in the painter; for he was prior to the sculptor in the decoration of this part.

In rooms intended for this delicacy and shew, their height admitted, and elegance required, the introduction of a higher order.

The *Corinthian* was taken. Its cornice in all its proper beauty enriched the top; and its pedestal was in the lower part projected forward in different places; and decorated with the compartments they allowed its die.

These, while they gave a new beauty to this part, shewed the plainness of the upper division in a worse light; and here the painter filled up the defect: with his three colours he struck out compartments correspondent to the ornaments of the enriched pedestal; and in these he, in the same great manner, represented to the possessor's eye some action of an heroic ancestor, and filled the vacancy with a secondary life.

Genius supplied all here; the knowledge of the painter made amends for the coarseness and imperfection of his materials: and histories rose in every compartment; of which the best idea we can form will be drawn from the *Cartoons* of *Raphael*; tho' very faint resemblances of their greater pencil.

C H A P. VII.

Of the modern decoration of rooms, deduced from the antient practice.

THIS was the article of finishing and decoration of rooms first devised; and the great care was to give an equality of ornament: no part was to be crowded, none left vacant; and this we are to imitate.

To what the painter had devised succeeded the sculptor; he threw in ornaments in the richer apartments within the circumference of the pannels; and where less elegance was required, the pannels themselves were judged sufficient.

These were made of the same plaister with the mouldings of the pedestal and cornice; and the pannelled stucco rooms thus rose upon the idea of those with painted compartments.

This we have followed in some places; and upon this is founded our general plan of decoration. When they placed in the compartments pictures of great consequence, they decorated their edges with sculpture along the mouldings; and in the smaller they hung festoons of flowers: all this our people copy, without knowing whence or why, for the modern architect knows nothing of the Grecian practice, but treads in the bare steps of his predecessor.

Errors and abuses have been hence introduced; and these we hope, by reducing the whole practice to its original standard, to banish.

We follow the antique practice; but let us follow it strictly: pictures and glasses, our fashionable furniture, may be disposed more happily in these compartments than any other way: and nothing prevents, that while we decorate the richer apartments with sculpture, we follow the practice in the rest by panneling.

A conspicuous side of a room is that in which a chimney is placed, and this requires a particular decoration.

How the chimney-piece may be constructed in various manners we shall shew in a succeeding part of this work; but whatever method be followed, a principal compartment should be raised over it to receive a picture. This will be very happily terminated by a pediment; and as we have observed that there is no objection to an open one within doors. It may be broken to receive a bust, a shield, or other decoration: and as this can reach only to the chimney-piece, which must be a great deal above the height of the pedestal, the compartments, or pannels, on each side being brought within a small space of the pedestal, will give a pleasing variety.

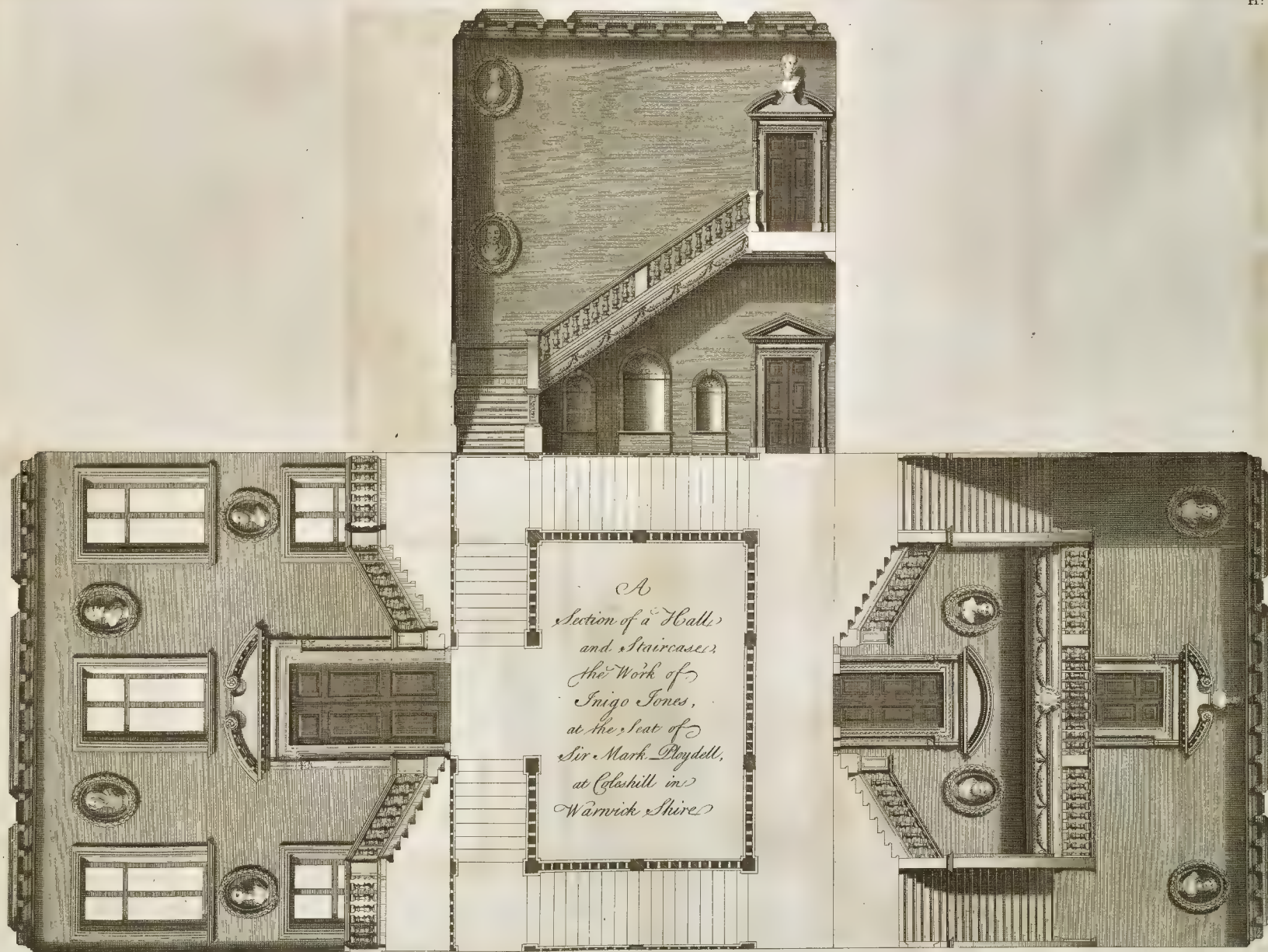
Book V. Another side of a room we will suppose receives a large glass, and the disposition of this is easy. The principal compartment is to be formed purposely for it, and the sides of it decorated with two smaller pannels, of the same height, but narrower according to the dimensions of the room.

Over the door there is a space for lower pannels, unless where pediments intercept them. In this latter case the pediment should be opened to receive a figure that will fitly occupy the place: in the other the whole is to be ornamented with a compartment in stucco or wainscot, according to the construction of the room; and if not pictures, festoons should be the ornaments.

According to the intention of more or less decoration in the apartment, the mouldings of these pannels or compartments may be left plain, or ornamented with sculpture; and where the shape of the room, and necessary use of the principal pannel in a side, has occasioned there should be two very narrow ones, nothing gives a greater beauty than the dropping down each a long festoon

These principles of the finishing of rooms we have endeavoured to illustrate to the eye of the practical student, by the designs in the annexed plates, suited to different degrees of expence.

We have in these endeavoured to shew him how plainness may be ornamental, and by what easy means he may rise from thence to decoration; what these first plates represent is all of the more moderate expence, but we shall not leave him unacquainted with the various methods in which, where he designs for a proprietor of taste and fortune, he may add those things which will equal the magnificence of their owner's fancy; either by following the rules we shall lay before him, or the practice of one of the greatest masters in the science our country has produced, which we shall represent in a very happy instance.



20 Feet

C H A P. VIII.

Of suiting the ornaments to one another.

THE architect may very frequently design an elegant side of a room, which yet may be improper for the place, or disagreeable to the rest of the ornaments. The remedy for this is to reduce no part into practice, till he has upon paper designed the whole together. Architecture is not the only art in which men of genius have ran into this error; and it is indeed the common mistake of young men, whose fancy is at its height while judgment is in its infancy.

We see, in the works of some indifferent poets and orators, passages that would have been worth a place in the writings of the greatest, had they been applied and introduced properly; had they been of a piece with the rest, and a part of the whole: but as they stand they are detached sentences, which no man of judgment ever admired, because such have an universal rule, that nothing can be elegant which is not proper: it is so in architecture.

A room of the usual construction has four sides, or two sides and two ends; and it will disgust the eye if one side have ornaments, though ever so handsome, which do not correspond with those of the other.

This is a mistake so very obvious, that one would suppose none who deserved the name but of the meanest architect, could fall into it; yet we see it has been practised by some of better credit: nay there is an instance of one who pretended to justify it, by asking, Whether a man could see before him and behind him both at once?

It is needful therefore to name these faults, gross as they are, for the sake of caution; since there is not any thing so absurd but some have run into it; and there is nothing that has been done in a good house but some will copy.

When a design is therefore made for the finishing of one side, let it be placed on paper in its situation; and let no farther regard be shewn it till the others are delineated. In these let the student have all along the first in his eye, and let him contrive the fashioning of them to its resemblance.

There are instances in plain rooms where this will bring no difficulty; for where the parts are alike, their decorations may also be alike in all the sides; but this is by no means universal: the disposition of the doors, the situation of the windows, and the place of the chimney, are to be regarded. All these together, or even any one of them, may be an occasion of varying the dimension and form of the pannels and compartments; and something may arise from this necessity which makes it impossible to accommodate the three succeeding to the first design.

Book V. What must be done in this case is very plain ; but it would have been too late to find it out if the architect had before put in hand his design of a first side. The drawing will shew where they disagree, and reason will point out the method for a remedy. Where the three sides cannot be made to answer the design of the first, that must be altered to accommodate it to them : this way all will be reduced to propriety, and the designer will find that preferable to absurd beauty.

What necessity may compel in this case, some happy thought, some additional stroke of fancy, may occasion in another : the space between doors, the proportion of pannels between windows, the height over a chimney, or the recess at its sides, may give an idea of some peculiar addition, or of some singular construction of parts, which will not fail to affect the eye, and give praise to the taste of the designer ; but how is this to be introduced, if the decoration of one side be already executed, or already obstinately resolved in the architect's fancy ; for that with many people is the same thing ?

If the new thought exert itself in the ornaments only, something correspondent to them must be placed in the other side ; of which, when thus finally and invariably determined, it may not be capable : something may be necessary that cannot find a place in its compartments, or that will disagree with some other ornament already there. This will reduce the designer to absurdity who is thus fixed in his purpose ; but it may be worse ; the disagreement may not be in the ornaments, but in the construction of the compartments ; and these, if not agreeable to one another, must be abominable : therefore either some alteration must be admitted in this first designed side, or the improvements in the other cannot be introduced.

Often a very small alteration in the first designed side will serve, but whether smaller or greater it is necessary.

The student who does not take this consideration in time, will lead himself into uneasiness, perplexity, and faults ; of which he will never be ignorant as he commits them : he cannot be satisfied with what he has done, neither can he expect or imagine that others will be satisfied with it.

There is nothing more grating to an ingenuous mind than to reproach itself : let the architect, for his own private satisfaction, as well as his credit, recollect in time how disagreeable it must be to him to see with confusion and concern those works of his contrivance which might have given him the applause of others and his own.

We inculcate on this occasion the rule we have laid down on others ; that the student see the design of the whole, before he determine concerning any particular part : that he be deliberate in his determinations ; and weigh and consider every thing, before he puts the last hand to any thing for practice.

The four sides of the room being laid down on paper, with the space or proportion of floor between, the figure represents at once to the eye the whole and its several parts :

parts: they are easily so seen to be uniform or disagreeable; fancy can at pleasure raise them perpendicularly, and see the room in miniature; divested of its ceiling.

Thus let the architect consider it as well as in the plane: it is a view in which no other will ever look upon the work, because the room will not be finished in the reality without its ceiling; but the view will be useful to him in the highest degree, for the true method of seeing the proportions with a geometrical regard, is to view them in all lights, and under all advantages.

When the whole is thus seen at once, some happy thought will often arise that could not come into the mind from the consideration of any of the particular parts; and perhaps some light piece of sculpture will be now found applicable uniformly round the room; either continued uninterruptedly, or with its proper breaks; which will connect the whole more than the utmost regularity of the distributary ornaments, or compartition of the spaces.

C H A P. IX.

Of designing a finishing from the principal parts.

BY the *finishing* of a room, speaking in the artist's stile, we mean, as expressed in the preceeding chapters, the decoration of the walls, and distribution of their spaces, pannels, and ornaments; but the whole is to be comprehended under the term taken in its full and most extensive meaning.

We here take in the whole consideration; and, that the young student may the better regulate his thoughts concerning the several parts, lay before him a perfect whole.

Let him then consider his room that is to be decorated thus.

Let him comprise, in the idea of it, the pedestal, naked, and cornice of the wall; the ornaments of the doors, and the construction of the chimney: and be upon his guard that the decoration of one article, as well as that of one part, agree with another.

This is a consideration the more needful because it is very much neglected. We write for instruction, not reproof; else we could mention houses, and those among the most new and expensive, where, in some principal apartment, there is a wall well finished, a handsome door, and an elegant chimney: but where the whole is incongruous and inconsistent, and shocks the eye of science by its absurdity.

When we allow the wall, the door, and the chimney, in these cases, to be handsome, they must, to deserve that praise, be considered as a wall, a door, and a chimney-piece, separately and detached; not as a part of the same room, for they are unfit for one another. There is merit in forming these detached pieces well; but why will not the person who deserves that praise, add to it the applause of putting them also well together?

The

Book V. The invention of a single piece is the work of fancy; the putting them together
 is the province of judgment.

Often the wildest essays of the imagination are the most pleasing; but fancy must not be employed beyond her bounds: she may be allowed and encouraged to devise ornaments; but she must never be suffered to put them together; that is the business of a more sober faculty, the judgment. It requires taste as well as the other, but it requires also science. Experience of what is best, and a strict attention to method, can alone fix this matter on its proper footing. Youth may fancy and contrive ornaments, but it is the province of a more established period to settle or reject, to adopt or banish the several designs; and, when that is done, to form and regulate the whole.

In this large view we have at present taken of the finishing a room, including all its parts from floor to ceiling, this doctrine will be easily established.

We speak of an expensive and elegant apartment in this place, for in the former chapters we have considered those which are plainer. In this room we suppose a rich cornice is intended; and that the chimney-piece and doors are to have their noblest ornaments, that is, the use of the orders is to be called in to embellish them.

So much the architect proposes to his proprietor, as the richest means of decoration; and to so much he consents. Now the choice is to be fixed upon the several kinds. The youthful designer, proud of the extent of his commission, sets himself down to select, or to devise, what shall be first in each kind.

He ransacks modern figures, and he turns over the best representations of what remains yet, or did remain within the time of writers, of the labours of antiquity. He selects a noble cornice; he composes an elegant door, embellished with some peculiar construction of a rich order; and he plans out a chimney-piece upon the same idea. He is happy to be employed where expence will not be spared; he is ravished with the sight of his collected beauties; and, considering that the walls of such a room must be rich, as well as the several particular parts we have named, he lays them by in his port-folio, and begins the design of a side: when one is finished he undertakes the other; and thus, piece by piece he compleats the number of parts.

This is the work of fancy: he reviews it with an eye of satisfaction; and wanting the sober direction of judgment, he considers no farther. All are elegant; but they are improper to be mixed with one another. They would make the parts of four five or six different rooms; but they are very unfit to be comprised within the compass of one.

This he does not see; or, if he does, his fondness for these offsprings of his brain will not permit him to see it. He puts them together: and the proprietor, who has not studied architecture as a science, is pleased with the gaudy appearance, and so are most who visit him.

There

There cannot be worse composers in this art than there are judges of their compositions. The architect contents himself with the applause of the vulgar; and the owner is charmed with the common praise: he shakes his head when he says critics do not like it: but it is certain that the same expence he has bestowed upon these ill-forted ornaments, would have enriched his apartment in such taste, that the judges would have approved it, and the common eye been delighted with it more. Chap. 9.

This is his proper consideration; and there is one of equal force for the architect: he is to be told, that the ill-forted ornaments he has lavished upon this one room to his discredit, might have been a source of the decoration of several, so as to have done him honour.

This leads to the consideration of the distinct business of the present chapter, which is the designing of a whole finishing, from some one of the principal part: this is the true method; and this, while it gives satisfaction to the most judicious eye, will be easier to the architect.

Let him not suppose in this case, that any of his principal parts which he has thus selected, are thrown away, upon our present plan. We have supposed his fancy to be so good, that they are all just and elegant; it may happen that two of them may agree one with the other; but, being chosen at random, it is not very likely they should; that all three should is not to be expected.

We will take the more probable conjecture, that no two of them agree: the consequence is, that but one of 'em can be admitted into the room he is about to decorate; but the two rejected from this may be brought into use in two others; and each be made the foundation of a compleat design.

Thus in the present case, when he has reviewed and considered the three principal parts, the cornice, the door, and the chimney-piece, let him fix upon any one of these, and adopt a finishing to it. This will be easy when he has once entertained the notion of conformity, and agreeableness of parts; and thus, instead of having bestowed all his time for the comprising ornamental parts for one room, he will have furnished himself for the finishing of three.

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Book V.

A COMPLETE BODY

C H A P. X.

Of taking the general design from the chimney-piece.

OF the three principal parts we have named, the cornice, the door-case, or the chimney-piece, either may be the choice upon which to form the rest. The general mistake is, that no part is chosen for this purpose: the doctrine of appropriation in ornament is not understood in this case; and it is therefore we scarce ever see it decently practised. We will suppose of these three parts the architect chuses his chimney-piece for the purpose.

We have supposed it decorated with an order of architecture, and here we are to tell him he is somewhat limited: for that the inferior are more proper for chimneys in these ornamented rooms than the superior orders.

This will seem strange, but we shall make the reason evident; we write upon a subject none has yet considered, and we are therefore to explain all we advance.

All architecture is comprised within certain rules; and they are the same, to whatever part they are applied: were it otherwise this were not a science, nor could it be reduced to rule.

The reader will recollect, that in treating of the exterior decorations of houses, we have laid it down as an everlasting rule, that when an order of architecture is employed in a building as a part of its main front, and the windows are also decorated with columns; these last should always be of that order which is next in degree below that employed in the principal columns.

This, though a rule not established before, we have supported on the authority of the greatest architects; drawn, though not from their writings, yet from their works.

This rule being established with respect to outside decorations, must therefore hold, according to what we have here shewn, with regard of those within. It follows therefore, that the chimney-piece being the first thing designed, and the fixed point from which the architect is to direct his work in the rest, all is to rise from it in a like proportion.

Thus considering the three parts in the light of their importance, in their place, nature, and situation, the cornice is the principal, the decoration of the doors has the second place, and the chimney the third, or last and lowest. It would have been equal if the student had begun with drawing his cornice, and proceeded downward from that; but as it is all one from what part he proceed, provided he regularly do proceed from some part, we have chosen the chimney-piece as the most natural, and the easiest for the conducting of the whole.

If in an apartment intended for a middle degree of decoration, the doors be intended to be executed without columns, then the cornice and the chimney-piece are the only two parts in which the orders are concerned. Chap. 10.

The pedestal we have directed already to be constructed with an exact truth according to the cornice; and these forming the principal part, the chimney-piece is to be looked upon as the second, or inferior decoration.

According to our rules before established, the cornice is, in this case, to be of an order next above that employed in the construction of the chimney-piece: thus, if the chimney-piece be *Doric*, the finishing of the walls should, for that reason, be an *Ionic* cornice: if the chimney-piece be *Ionic*, the cornice should be *Corinthian*.

This pleases the eye, and satisfies the judgment. The chimney-piece is nearest, and it naturally catches the first attention. It is elegant; and therefore the eye, being directed higher, looks for more elegance: if what it sees above were of the same order, there would be a tameness and poorness expressed in it: if less elegant, it would be carrying the eye to what was worse, and that would be abominable.

Reason therefore directs what we have laid down as the true course; the eye is thrown from one degree of elegance to another which is greater; and this not rashly, or by an unmeasurable start, but soberly and in proportion.

Thus far the student comprehends, that whether he establish the cornice, or the chimney, as his first principle of regulation, provided there be no other order in the room, these must gradually and proportionally rise or descend by a single step, one from, or to, the other.

He will begin to see from this, why we declared against the use of the richest orders in chimney-pieces on this occasion; because there was an advance needed from the chimney to the cornice, and this could not be where the richest was employed below: but we are to name a farther consideration, which is the introducing another part, decorated with an order, into the same room. This third article is the door; and we have only postponed it in this consideration that the rule of construction might be less embarrassed by the number of parts.

It is natural that such a room as we here treat of should have the door-cases finished with an order; and there is no finishing which will give the whole such an air of grace and dignity.

In this manner all will be conformable to the rules of truth, and the practice of the antients; and, if executed with the discretion we are about to recommend, all will be great and graceful.

The door being intended to receive the decoration of an order, has its natural place in this disquisition; the eye ranks it, according to its height, as of a middle kind between the chimney and the cornice; and the judgment gives it the same regard. There-

Book V. Therefore the same law of the science which decrees that the cornice shall be of a higher and richer order than the chimney, places the door between them.

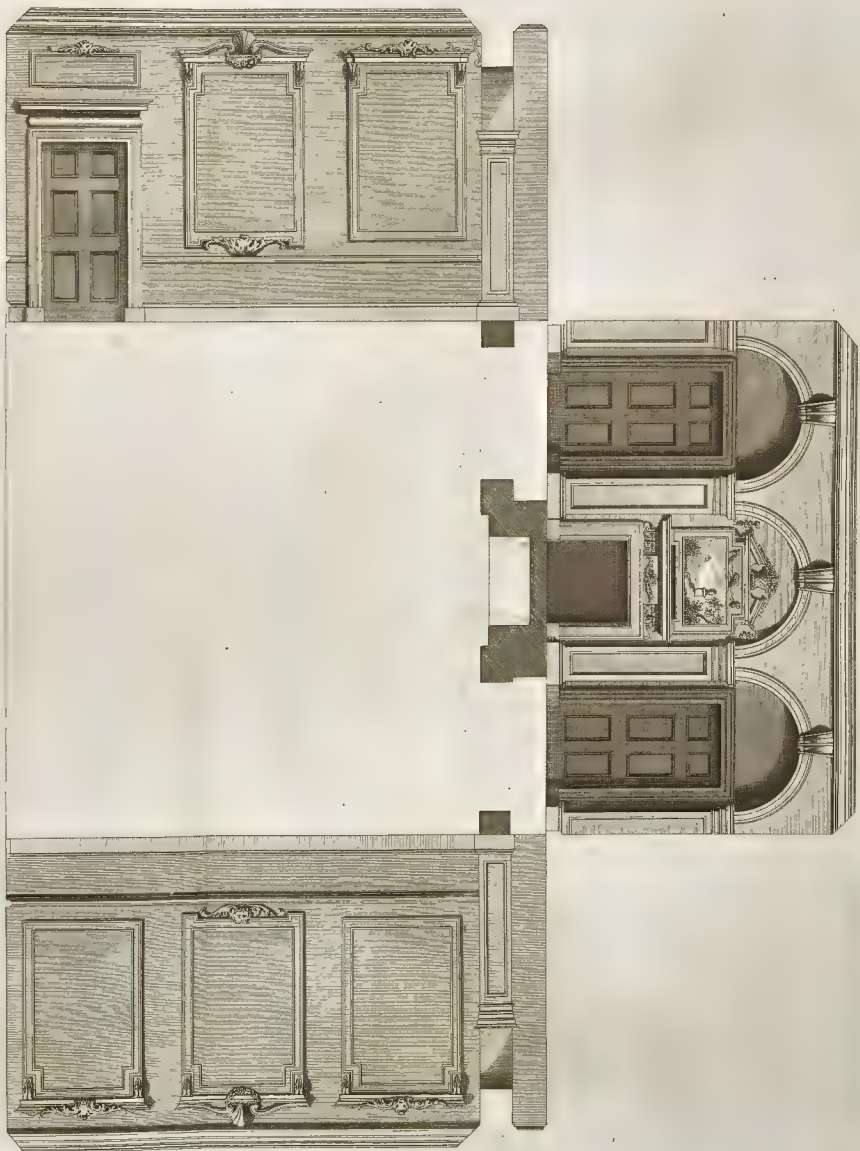
In this case the advance from the chimney to the cornice, must not be by a single step, as in the former, where there was nothing to attract the eye between them, but it must be by two steps, the order employed at the door filling up the gap between.

These principles being laid down, we may proceed with our student to practice.

If he will adapt any of his three fancied parts into his new design, he sees how he is to construct the rest according to them. If it be the cornice he preserves, the order to which it belongs must be considered: not only the pedestal must be appropriated to that order, but the ornament of the door and chimney must be deduced from it; the door being decorated with that order which is next below, and the chimney with that inferior to the order used in the door.

This serves as the general rule, and upon this foundation he may appropriate every other part. We have given him in this short lesson the whole ground-work of the practice; and we have in the annexed, and the three preceeding plates, represented to the eye several methods of finishings, where the architect is left ty'd down to rule, and will find all open to fancy.

We hope from the rules on the one part, and examples on the other, he will be qualified for undertaking this matter under any form with truth and elegance.





B O O K V.

P A R T II.

OF CEILINGS.

The I N T R O D U C T I O N.

WE have led the attentive student, by gradual advances, in the several preceding books, to the construction of his rooms, and finishings of their sides, with ornaments of a plainer or more expensive kind; we here lead him to the ceiling, which covering all, so far compleats the whole:

In this we shall advise him, as in the formerly-mentioned articles, to lay down for his examples those great and glorious remains we have of the antique; and to guide himself by no rules but those which can be either drawn from such examples, or authorized and illustrated by them.

Thus he will see the *British Palladio*, *Inigo Jones*, conducted himself in these noble ornaments: and thus *Palladio* himself.

Since their time, such as have studied their works, have formed their ideas, and constructed their edifices upon the same sole principle; nor is it a less glory to the late lord *Burlington* to have adopted at *Chiswick* a *Roman* ceiling, than it would have been to have devised a new one.

The antients, who had more genius than our architects, and a bolder fancy, had also more severity of judgment.

It is not wonderful; with these advantages, they excelled all we have been able to produce by innumerable degrees: but, knowing this as the source of their excellencies, we know how to copy them.

Our people err, not only in the degree of ornaments, but in their very nature: the antients offended in neither of these articles, and it is therefore from them alone we can deduce a juster knowledge.

C H A P. I.

Of the ornaments of ceilings in general.

THE scope of fancy in the decoration of ceilings is very great, even without transgressing the severest rules of propriety: the division into compartments is natural and proper; and the first thing that offers to the imagination in the decorating these, is the adding mouldings in the divisions.

Even this, when the ornament is carried no farther, has its beauty; and few would think, who have not seen it executed, how much grace there is, in the simple division of a ceiling, by a judicious hand, into these plain compartments.

This we may call the first stage of ornament; the next in degree above an absolute plain ceiling.

For the second degree we shall name the addition of sculpture to these mouldings; the centre of the compartment being all this time plain.

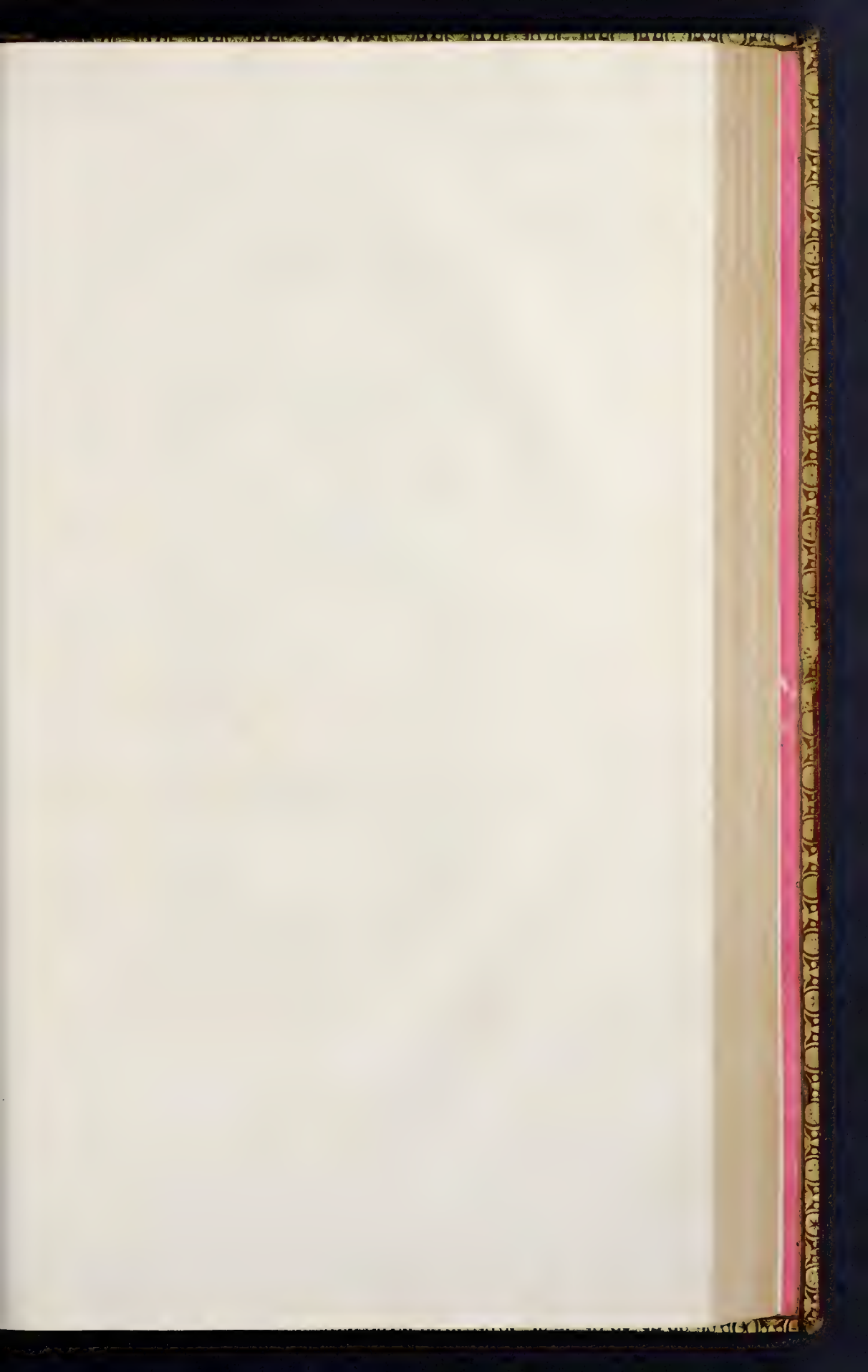
A third degree, the centre still left plain, is the addition of scrolls and faces in the verge of circular designs.

The degree of decoration in these three kinds may differ, and thence may be given various stages of ornament, according to the expence: but this, in a general view, is all that can be done while the central part is left plain and vacant.

When the pleasure of the proprietor authorizes, or the correspondence with other ornaments requires, that these central parts should be decorated, we rise to a fourth degree of embellishment; and thence to many higher: the first of these, which for distinction and plainness, we shall here call the fourth degree of general ornament, consists in the placing a flower in the centre of the principal compartment: this alone giving a great look of finished elegance.

In this case we have supposed the other compartments to remain vacant; but, as a fifth degree, we shall name the placing a flower in each of these; in which case the flower in the central pannel must be proportionably enlarged.

Lastly, for a sixth, which may close the account of moderate ornament, we shall propose, instead of placing a flower separate in the centre of each outer pannel, to throw into it a scroll from the mouth of some beast's face, in the verge of the principal compartment: and, in this case, the central ornament of that principal pannel must be also farther extended.



• Cithara per a • Barroca •



These may be considered as the six stages of ornament in ceilings, within which a moderate expence must be terminated; and by which the architect is, for the sake of those who will go farther, to ascend to the great and rich designs of which we shall treat in a succeeding number. Chap. 2.

To explain and illustrate these, we have given, in the two *Plates LXXIV and LXXV*, two designs, whose varied ornaments will represent these six descriptions in their several parts.

The method of leading the student most easily to this knowledge is to consider first with him those ceilings, which, when decorated, naturally fall into fewest compartments: with these we shall begin; and from these advance to those, where, the parts being more numerous, the method is more difficult.

C H A P. II.

Of stair-case ceilings.

THERE is no part of a house where the eye is more naturally directed upwards than the stair-case: this is a reason why some compartition and ornament of the ceiling is in that part peculiarly proper.

When we enter a room, the variety of objects calls the eye from place to place; and the furniture, as well as decoration, claim this divided share of the attention; but in the passing up stairs, the eye is naturally directed to the sides and top, and this justifies the finishings usually bestowed upon those parts of an edifice.

For our present purpose we shall suppose an oblong narrow ceiling is to be constructed in this part, with some decoration. It will be the most proper for a beginning under this head, because smaller than others; and because from its form it will, if divided into compartments, admit but of three, a central, or principal, and two smaller.

In a house any thing decorated, we shall advise our architect to recommend the giving some embellishment to this ceiling; and shall explain more at large the general rules just laid down, by proposing the various plans, on which he make designs to lay before his proprietor, according to the six established degrees of expence.

If some decoration be allowed, but the least that can be admitted, we shall advise him to divide the whole length under three compartments.

Let these be surrounded by plain mouldings, and every thing within and about them be left plain.

Book V. In this there will be no great expence ; it will give an air of beauty and dignity vastly above that of a perfectly plain ceiling : and if there be nothing else of the kind in the house, it will still look well.

If the student would see the best measures of the several parts, let him apply his compasses to the compartments in *Plate LXXIV*, and he may, in the same design, see the manner of executing it. The left hand pannel in that figure is wrought plain, and he has only to work the two others in the same manner.

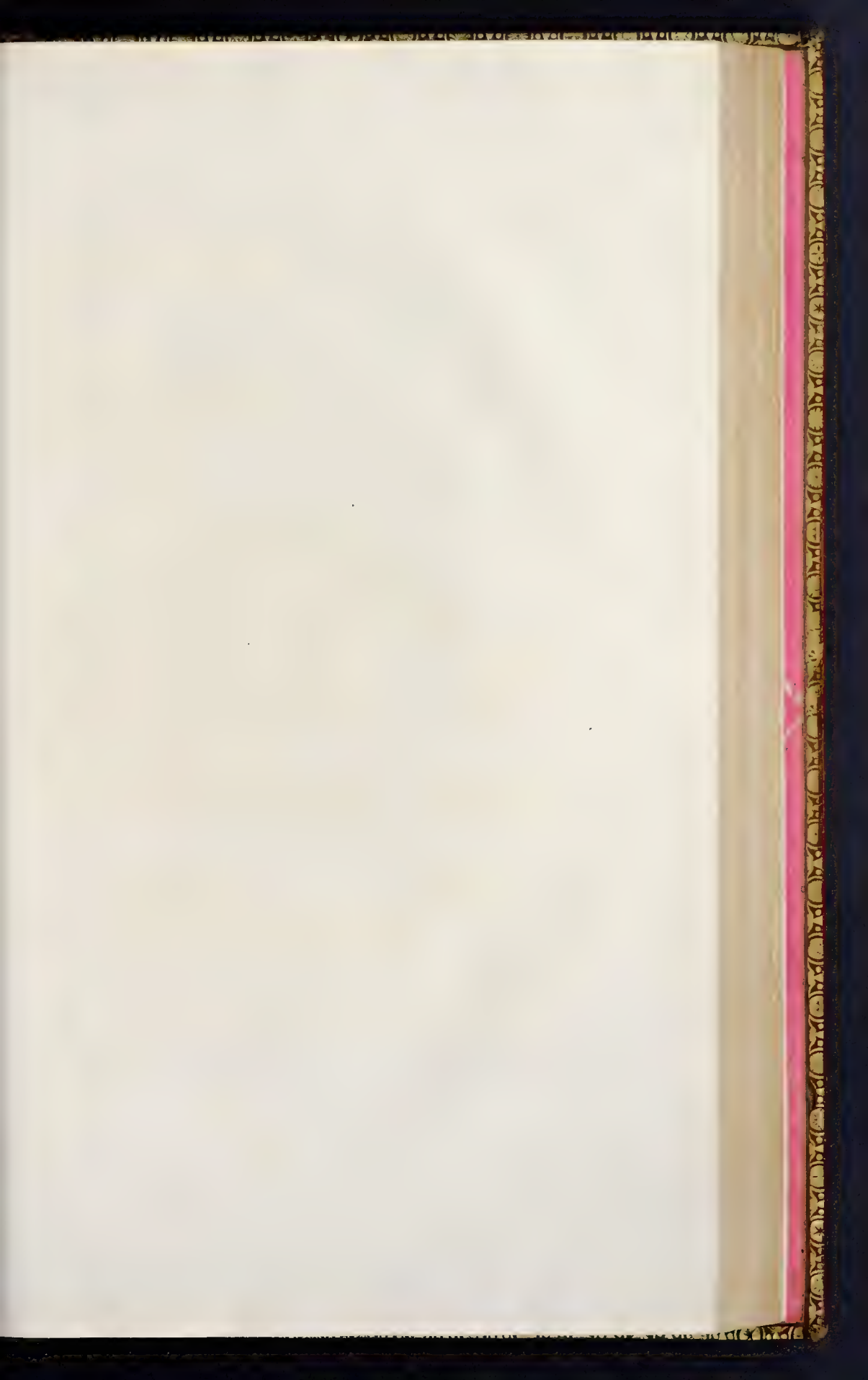
If this design do not sufficiently answer the intent of the proprietor, let him preserve the same division, but finish the whole drawing in the manner of the right hand pannel in the same figure.

This will give what we have established as the second stage, or degree of ornament ; that is, the dividing by vacant compartments with enriched mouldings.

To execute the same ceiling according to the third degree of expence : let him, still preserving the same outline for the three compartments, add two scrolls and two faces with the same ornaments, in the verge of the circular or middle compartment. The two others are then to be executed with sculptured mouldings, in the manner as represented in the right hand pannel ; and the whole will be thus constructed upon the same principles of a regular and true division in a more expensive manner.

One figure serves here for the explaining these three manners of executing this ceiling ; but we shall advise the architect, when he proposes such a piece of work to his principal, to finish the three drawings one in each way ; for tho' one versed in these studies may be able to carry in his mind the idea of an ornament, as expressed in part, round the whole, it is better for the unexperienced to see the whole exhibited in the several forms.

Let not the student think it hard to make three drawings for one work : he is pursuing the course of his studies while he is doing it ; and they remain with him as so many designs, a part of his profession, and ready for other occasions.





C H A P. III.

Of a stair-case ceiling with other decorations.

LET the student who would consider how farther ornaments may be added to such a ceiling as we have just named, turn his eye upon *Plate LXXV*. The out-line is the same and the compartition; he will therefore with less difficulty apprehend what we have to say of the additional decorations, these being the sole object.

In the first place as he has in this a design of more elegance, it is in his choice to take off the corners of the two smaller compartments; thus reducing them to elliptical, or as they are vulgarly called, oval figures: and, rendering them by that more suitable to the intended ornaments. This done, let the ornaments of sculpture bestowed on the mouldings be richer than in any of the preceeding designs; and in the centre of the principal compartment place a flower: this will give an air to the whole quite different from what it wore in the preceeding designs; and an eye not accustomed to these things would not conceive so great a variety could be deduced from so small variation. To execute this, let the student take the general figure of the outlines in our design *Plate LXXV*, with the flower in the central compartment, and let him leave the others perfectly vacant.

This serving as an instance of the fourth degree of ornament, if it be not yet rich enough for the proprietor's taste, or to answer the rest of the decorations in the edifice, let this small addition be made: let the flower in the central compartment be enlarged and enriched by the addition of some more work, and in the middle of each smaller compartment let there also be placed a flower: all the rest is, in this case, to remain as it was in the preceeding, yet there will be quite a new aspect in the whole ceiling.

If the compartments do not yet appear full enough to the eye of the proprietor, let the architect give in his sixth and last design on this plan, and let it be made thus. Let the mouldings of the several compartments be wrought bolder and fuller of sculpture: let the two faces in the parts of the verge of the mouldings belonging to the principal be made larger and stronger, and instead of human, let them resemble lions' heads. Then from the mouth of each drop a scroll, which falling into the smaller compartment, shall expand each way nearly to its limits; and from the ends of this drop a festoon. Let this follow the inner line of the mouldings, and be kept at a small distance from it. The two external pannels being thus filled with ornament, the flower in the midst of the principal must be enlarged and enriched to answer them; and thus will the decoration be carried to the full height we have proposed to represent within this degree of expence.

The two compartments at the ends in *Fig. LXXV*, are decorated in these various manners, and the student has only to form both according to either in his designs of the fifth and sixth degrees.

Of placing the circular and elliptical compartments.

IN the small ceiling we have chosen for our first representations of the manner of decoration, the nature and reason of every part, and of its disposition, will be familiarly understood; and when our young designer has made himself a master of these, he will find no great difficulty in the succeeding more intricate compositions.

To understand the placing of the compartments in these ceilings, let us refer him back to *Plate LXXIV*, there being in that least ornament, and a gradual method of proceeding.

In all division of parts a first regard is to be had to the whole: the out-line is to be considered in order to a just distribution of the internal decorations.

The out-line of the whole figure being squared in this place, the natural form of the compartments is to be squared, that they may answer it.

The first thing therefore is to mark out the whole space into three parts; a principal with its two end compartments: and this general measure being laid down, and faintly marked in upon the paper, let one of the end compartments be struck with its plain out-line, expressing the internal space, and the breadth of its mouldings. This is to be done as in the left hand figure of *Plate LXXIV*.

Then let the other be designed in the same manner by a bare out-line; and this done, let the round or central compartment be struck by a pair of compasses, first marking the inner verge, and afterwards the full extent of the mouldings.

If the whole were left thus, the eye would discern a strange vacancy remaining, and the middle part, intended to be the most ornamental, would be the most ungraceful.

This depends upon that want of conformity between the inner divisions and the out-line of the whole, against which we cautioned the artist at the beginning of this chapter.

The two end pannels will look very well, because their figure agrees with that of the whole; but the middle one, being circular, does not fill its place, nor correspond yet with the whole, or with these other parts.

This is to be remedied by placing it in a square.

The faint out-line of such a figure we suppose to have been originally marked up-
 on the paper, before the compasses were employed to inscribe the circle within it, Chap. 4.
 This must now be figured a little stronger, and finished with a small slight mould-
 ing.

The manner of this the student will see represented in *Plate LXXIV*, in a plain way; and this square being thus designed, and lightly expressed, the whole of the inner compartition will be rendered correspondent to the out-line of the ceiling, and the circular compartment will appear only as an ornament inscribed within the proper and natural square of the division.

As we design in the finishing up this figure, that faces with the decoration of scrolls shall be placed in the verge of the circle, these will fall over the line which should mark the square in several places. It would be needless to continue that line when it should be hid, and this gives the idea of a lighter and more suited disposition of the whole.

Let the student recollect that all we intend here, is for the sake of conformity, to preserve an out-line of a square figure in the centre, to answer to the two squares at the ends: therefore the more lightly it be done, provided that it is distinct and visible, the better. To this was owing our ordering that it should be only represented by a single slight moulding; and so it will be found in the figure to which we refer. But as the scrolls, ornamenting the mouldings of the circle, prevent its being continued all the way from corner to corner, let it in the whole be made nothing more than a mark of the four corners, and continued only to a limited and moderate length.

The measure of this will be easily determined; for the scrolls which stop the line are to give its termination.

Let it be continued from each corner cross-wise of the ceiling, till it meet the scroll of the face both ways; and let it be then continued the lengthway of the ceiling in the same measure.

It will not thus meet the scrolls placed there, because they are smaller and shorter than the others; neither is it intended that it should.

This seeming imperfection, which might easily be supplied, if that were proper, by continuing the line a little farther, will give a lightness to the whole, suited to this design: it will shew that the lines within which the circular compartment is inscribed, are the shape or shadow of a square, rather than the reality; and that is what the drawing intends to represent.

This circle being thus inscribed within its square, there will still remain a great space between the corner of the square, and the edge of the mouldings, making the out-line of the circle.

This

Book V. This rises from a very natural cause; for both the place of those lines, and the dimensions of the circle are limited; the first by uniformity, and the latter by proportion.

Uniformity requires that the lines marking the square be at equal distance from the mouldings of the edge of the ceiling with the out-line of the square pannels: and this gives their place invariably.

The proportion of parts requires that the circle exceed the diameters of the two end-most pannels, but in a certain ratio; and that makes its bigness as certain. Now between these out-lines thus determined, by necessity there will be a large vacant corner each way within the square.

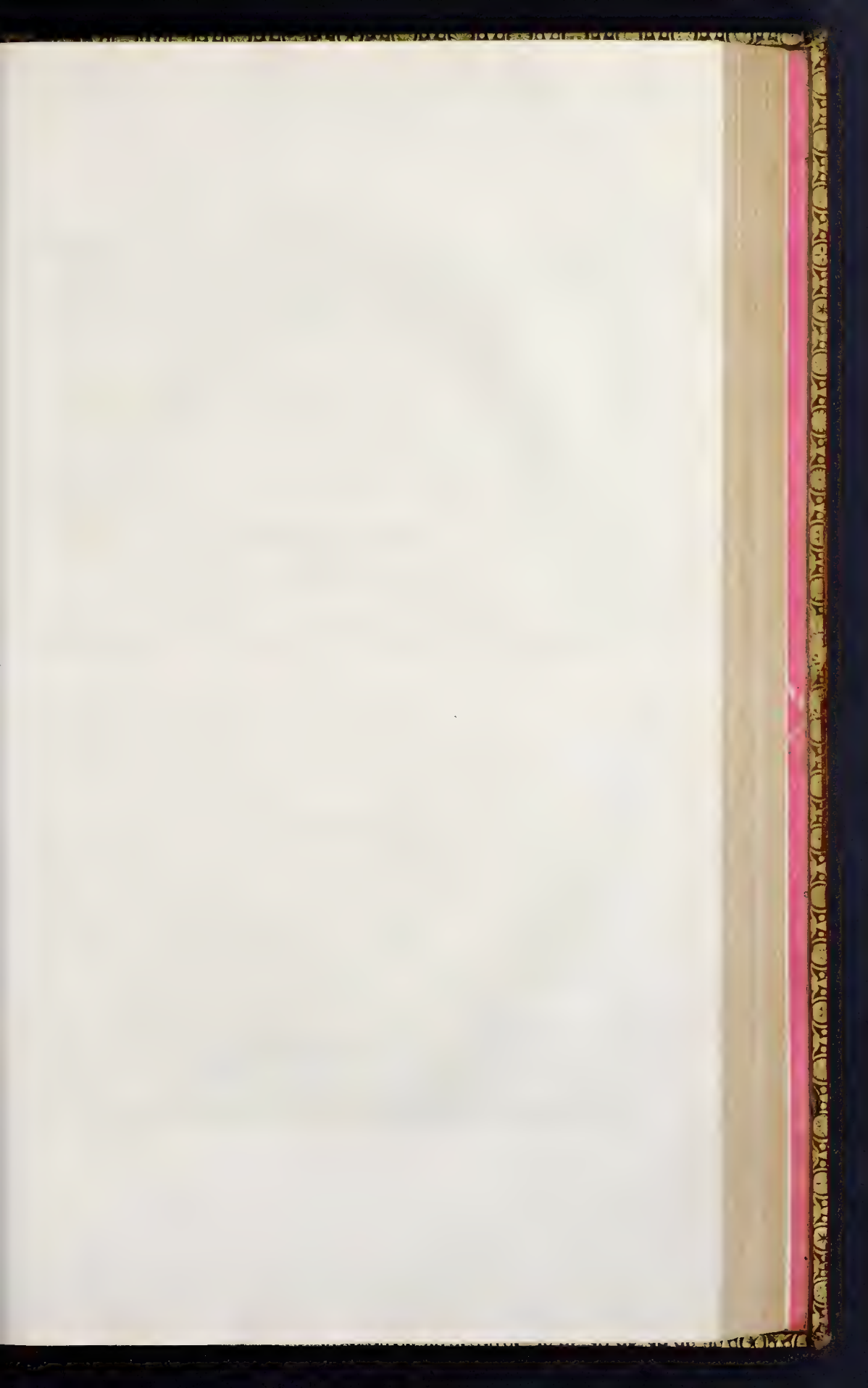
This looks amiss at first, but it is the province of genius in the architect to convert imperfections to beauties; and it is easily done in this case.

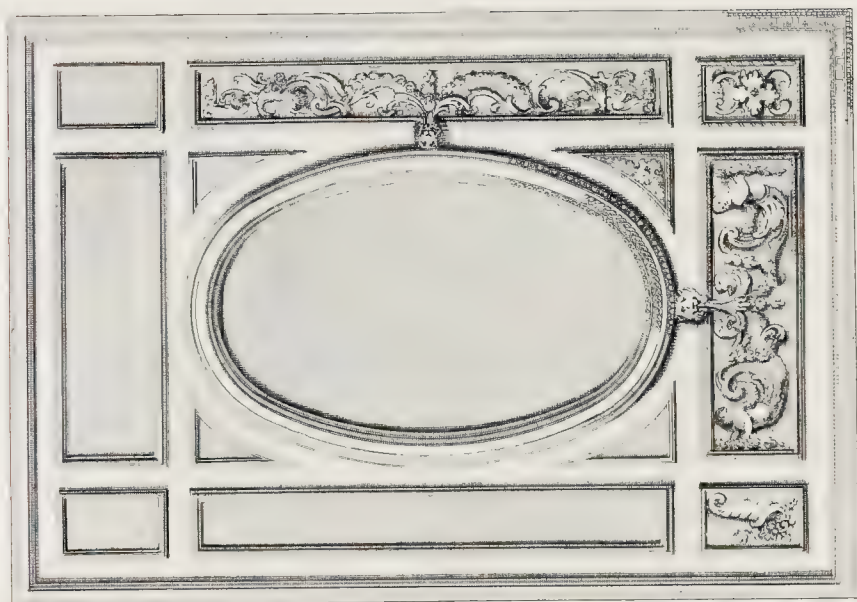
First, in order to reduce the space, let a line be drawn concentric with the lines of the mouldings of the circle, and at a moderate distance beyond them: let this reach from corner to corner of the lines which make the square, and no farther; and let it be ornamented with the same light moulding which those lines have.

Thus is this great and displeasing vacancy at once lessened: the idea of the square is better preserved than before; the broken parts of the circle form an interrupted outline to the proper verge of it; and four small regular and handsome spaces are marked out at the corners.

These in the plainer work are to be left entirely vacant, as we have represented them in *Plate LXXIV*; but they may at pleasure be made the seat of ornaments, as we have shewn in *Plate LXXV*, by throwing into them vases or cornucopia's, whose festoons uniting with the scrolls of the faces, will continue a richness of ornament all round with very little addition of expence.

What we have here said of the inscribing the circular compartment within a square, holds equally of the elliptical ones in the design in *Plate LXXV*, only it may in these be marked out yet more lightly: the corners need be only touched in the same manner as we have directed, and as we have represented in that figure.





C H A P. VII.

Of ceilings of rooms and their partitions.

THE student in architecture will have formed, from what we have delivered on the subject of stair-case ceilings, a general idea of the division and ornaments proper for those of rooms: we shall therefore continue that disquisition from those smaller and more simple to these naturally larger and more complicated kinds; illustrating, as in that instance, the several rules by appropriated figures. In these shall rise gradually toward those more elegant designs of which we shall treat in the succeeding numbers.

We have hitherto spoke of ceilings so narrow in proportion to their length, that a single compartment into a middle and two ends, answered the whole purpose of a distribution into parts.

This is limited either to the ceiling of a stair-case, or a passage, because no others are so shaped. The smallest room approaches nearer to a square; and, in consequence, something more must be there done in the matter of distribution.

We will introduce our reader by the just degrees to this important part of his studies; and first consider with him the ceiling of a small room, of the common long square shape, and intended for the slightest degree of elegance.

He is first to consider in this the division of the space: it cannot be into three panels or compartments, because their breadth would be monstrously out of proportion with regard to their length; nor can it be by a single figure, because that will either crowd the sides, or leave the corners miserably vacant.

Therefore he is to consider of a proper partition for the whole length, taking in such a part of the breadth as is needful to the keeping up a true proportion.

The middle compartment is to be first established, and in this he has little choice as to figure; all the parts about it will naturally be square, therefore this should be made with a sweep; and the length needfully prevailing over the breadth, to accommodate this part, it must be elliptical.

Let the reader cast his eye upon the right hand figure in *Plate LXXVI*, and he will understand what we propose in the double respect of form and proportion.

This central figure being placed in the out-line of the drawing, let him for the present reject all consideration of ornament, and think only of the distribution of the remaining space into form.

Book V.

He will see a large compass on each side, but let him begin in the respect of length.

Let him at each end of his elliptick figure place an oblong square; the form and dimensions of this will be directed by the rest of the work, and he cannot well err.

The length of this square must be equal to the ellipsis in its broadest part, and its breadth must be such as can stand without crowding, between the end of that central figure, and the verge of the plain part of the ceiling.

It must leave a free space for the mouldings, and a small space between these and the cornice.

One of these figures being thus added at each end of the principal, a great deal is done toward the compartition of the whole.

To proceed regularly, let him lay down upon paper what we have here represented, in plain lines: this will shew him where is the vacancy, and what is wanted; and the rest, however difficult and inexplicable it may seem to those who view it in the gross at random, follows now easily.

Let him mark out another long square on each side correspondent to his ellipsis; that is, as the squares at the ends equal the diameter of the ellipsis a-crofs, let these equal it in length. These being marked in by plain lines, there will remain no vacancy but at the corners, and in each of these is to be drawn another square, equal in length to the breadth of the square at the end of the ellipsis, and in breadth to the long square which runs parallel with it.

This being marked in upon paper, the compartition of the ceiling is performed; and there remains only to consider the ornaments.

C H A P. VIII.

Of decorating the compartments.

THE least decoration that can be allowed in this case, is to enclose the compartments in the manner of pannels, and give them slighter or richer mouldings; in this there is no great charge, and the decoration, even this way, is very pleasing.

The student should make at least two designs in such a form; the first with the slighter, and the other with somewhat better mouldings: if he would have an idea at once of the effect it will take, let him look upon that part of the figure we have given for the illustration of these chapters, where the mouldings are all the ornament.

We shall, in a succeeding chapter, treat of the manner of decorating a ceiling with more elliptical figures; but we are here considering only the methods of decorating it when the compartments encompassing the ellipsis in the centre are square. Chap. 6.

In this case, the first thing, after the enriching them with mouldings, is to add the ornaments of sculpture in that part, leaving the rest vacant.

Many degrees of expence may be employed in this, and various kinds of carving introduced: we have given instances in the mouldings of the ellipsis, and square pannels in the more enriched parts of the same figure; and more may be added, giving in this case a full liberty to fancy, for it is no where so much to be indulged as in sculpture.

When there has been a design made in this manner, and the proprietor desires something richer, let the young architect, that we may avoid repetition, recur to what we have said of additional ornaments in the decorations of the two first ceilings; for all that was said of those may be applied to any other.

In the first place, whether more ornaments be or be not added, four small angular compartments, cut with a sweep on the inside will be very proper; and these, being enclosed by pannels corresponding to the rest, may, like them, be enriched in the mouldings with sculpture.

We are here treating of farther ornament; and beginning with these we shall add, that when the mouldings are carved, a light piece of foliage may very happily be thrown in.

In the same manner, when we advance beyond the sculpture of the mouldings, for the enriching of the other pannels, it is to be done by adding some ornaments within. This will be at once easy and of small expence, because of the narrowness of the compartments: festoons of leaves and flowers are very proper, and there is no way of throwing them in so agreeably, as that of dropping them from the mouth of a lion's face, from the verge of the principal compartment.

These should occupy the middle part of the space, but as it would be too long to carry them throughout to fill the whole, their ends may be received by the terminations of certain scrolls, which may happily fill the rest of the space.

This is the first and simplest method of decoration, and beyond this, within the scope of that expence we allot to the present consideration, we may establish two others. The first of these is to give fantastick forms of birds in the place of the scrolls, whose tails may be lengthened and curled up in the *Arabesque* manner, to receive the ends of the festoons; and from their mouths may drop a strait ornament in the same taste.

When this is not esteemed sufficient, the next advance is to be made by introducing figures; and these in a ceiling should be also after the *Arabesque* manner.

Book V. We see boys hung up whole by the back in some coarse old ceilings; and thus the architects thought bold and fine: but they always look clumsy, and seem in danger of falling. Let our student better understand his business: whole figures are not here the proper kind, for it would be idle to represent what it would be improper to suppose, men hanging in the air.

There are particulars in which flights of fancy are beauties, and this is one. The figures are to be such as represent boys or young women; tender and elegant forms; and they are to reach naked no farther than the waist: from this part downward they are to be a kind of Terms received into scabbards; and these may be twisted about variously.

These figures, being naturally longer, are fitter for the deeper compartments; and they should be placed near the two extremes, as we directed concerning the birds, that the ends of the scrolls into which their bodies run, may be turned up to receive the extremes of those festoons we have proposed to drop from the principal figures. These festoons may either fall at once from the mouths of the lion's heads, or they may be fixed to scrolls which issue thence.

These may be called the three degrees of enrichment within a moderate expence; and let us now take a review of them. In the first, the whole is so plain that an uniformity of ornament is all that can be expected; in the other, either part may be taken of the finishing with or without figures; or they may be very happily united: there is enough of uniformity to make them correspond; and the different depths, at which those two kinds of ornaments will fall, agree excellently with the dimensions of the compartments at the ends and sides of the principal or ellipsis. The ends allowing deeper, and the sides restraining the architect to narrower pannels, the bird ornament will excellently answer for the narrow pannels, and those with human figures for the ends.

In this manner the reader may see the ornament represented in our right hand figure in *Plate LXXVI*, and the builder may either execute it with the two designs as there laid down, or with any one of them.

The principal compartments being thus ornamented, there remain only the four small ones at the corners; and these are of a size to admit very easy cheap and agreeable ornaments. We have placed in one a cornucopia, which answers very well to this kind of space; and in the other a piece of fancy: various others may be devised; for there is nothing where the imagination has more scope: but from these it will appear how easily such a design is filled, and of what variety it is capable.

C H A P. IX.

Of finishing a ceiling with all curvilinear figures.

I N the preceeding chapters we have delivered various ways of decorating a ceiling, whose compartition should be in the rectilinear figures, the central piece excepted: We shall here enter upon a very different species of ornament.

We will suppose the central figure to be of the same kind in this as the preceeding, that the imagination of the student may be less embarrassed; and that he may perceive he is pursuing the same subject, tho' under different forms.

The first thing of which we shall remind him in such a design is, that this middle piece must be smaller. This depends upon a very familiar principle. Rectilinear figures will bear all proportions, and look well in all; but it is not so in segments of curves: they have no grace unless they have some tolerable extent; or, in other words, as small segments of large circles or ellipses make no appearance, there is a necessity of making the middle compartment in this case small, that the others may have a due bigness.

On these principles let the student set out, and he will find that, according to them, he must, in a ceiling of equal measure, make the central compartment smaller in this than in the other case, by a proportion like what is represented in the left hand figure of *Plate LXXVI*.

Then as there were in the former instance two squares answering to the sides, and two to the ends of the principal compartment, in this there must be four curvilinear figures. As the central compartment is elliptical, these must be segments of ellipses; the two answering to the sides must be segments of the length-way, or taken from the two sides of an ellipsis, and the others from the ends. The ends naturally require more depth in the segments, and the sides less: we have given a measure in which they succeed very happily in the figure just named.

Thus is the ceiling divided in this manner, and if it be left altogether naked, only marking the compartments by mouldings, it will make a very agreeable appearance, and that at no great expence.

No ceiling is more capable of decoration than one that is thus divided, and we shall explain the several manners.

C H A P. X.

Of decorating curvilinear compartments in a ceiling.

THE decoration of this, as of the preceeding design, depends upon two articles. The adding sculpture to the mouldings, or figures and other ornaments to the compartments included within them,

The first degree of ornament to the proposed ceiling will be the addition of compartments in the corners. The sweeps of these curves will leave naturally much larger spaces at the corners, than the division by squares; but there will not be the same necessity of filling them up, because the figures are here in themselves elegant.

In the other instance, they are so many dead squares; a form destitute of ornament; but here, each being formed by three convex and two straight lines at right angles, the form resulting from them is naturally handsome, and seems a compartment, like the others, of a studied form.

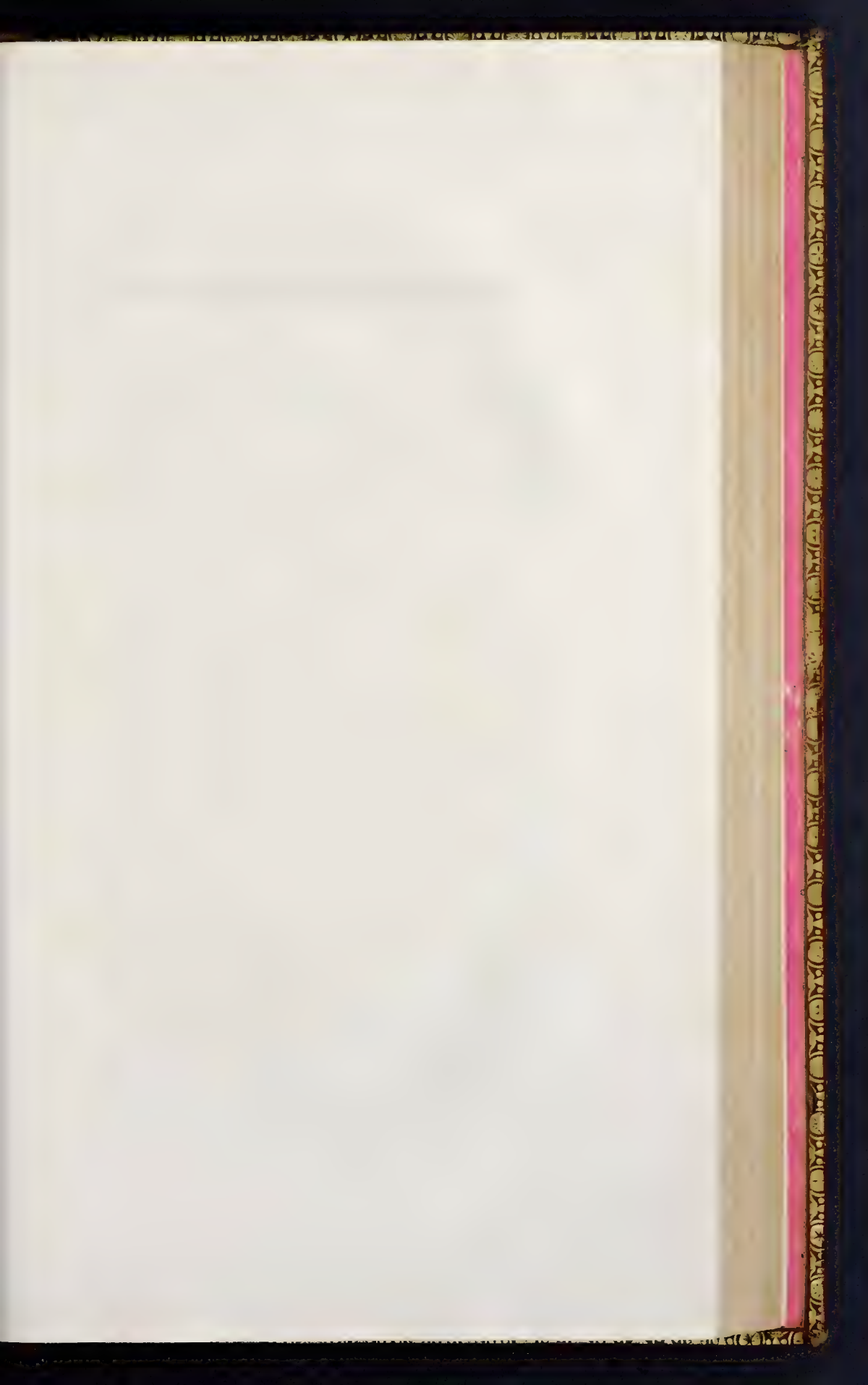
But altho' this be not ungraceful, there is room for an elegant addition within its limits: to this purpose, a mixed figure is to be drawn by following the several outlines of the former at equal distance; and this being inscribed in a slight moulding, will form as it were a compartment within a compartment, the result of which will be extremely graceful.

This is the first addition, and supposing that and the rest of the compartments to be left plain or vacant within, it will still be very ornamental.

The whole being figured in, the next consideration is the addition of ornaments in the spaces; for this purpose the same rules are to be observed as we laid down before; and the architect will find he has more liberty for executing of them, as the spaces are all larger.

The compartment at each end of the principal figure, will, by its depth, bear one of those grotesque representations of the human form which we received from the *Moors* and *Arabs*, and have recommended on the preceeding occasion; and the genius of the designer adding the idea of the *Terminus* and *Caryatic* may make a combination perfectly agreeable to the wild taste which formed these designs at first; and altogether beautiful.

Thus upon the head of the figure may be a basket of fruit or flowers; scrolls may supply the place of arms, and others may spread beautifully from the divisions of the scabbard.





W. H. Sturt

The side compartments, being less deep, may be decorated with trophies, or busts, in the centre; and festoons about them: and the mixt figures included in the way of compartments in the corner spaces, will serve for the reception of faces, or scrolls of fancy. Chap. II.

These several kinds of ornament the student will find in their places in the last-mentioned figure.

C H A P. XI.

The way of constructing a curvilinear division, with smaller side and end compartments.

THE student as he pursues this pleasing science will find that it affords an inexhaustible variety. The same figures may be differently disposed, so as to form many agreeable appearances; and the smallest variations are often a source of great beauty.

We have seen in the preceeding design a small elliptical compartment for the centre, and deep segments of ellipses for the ends; we shall here propose a larger principal compartment, and extend those mixed forms which are described in the corners of the other to a greater bigness.

We there spoke of the elegance of their natural form, and we shall here enlarge them for the reception of ornaments.

First then, let a large ellipse be struck for the centre in such proportion as we have given in Plate LXXVII.

This will leave large spaces at the ends, and narrow ones at the sides; and if these large endmost spaces were filled with segments of equal depth, the corners would be ungraceful.

This the student may confirm to himself at any time, by drawing them in that manner.

We have in the first-named figure given them in another form, which extending the corner space, gives it room for ornament.

To proceed in method, when the first or central figure is made, let the two side segments be struck: these will be very shallow; and they will give a proportional measure for those which we, in this case, intend shall be small also at the ends. Let a couple of segments from the ends of ellipses be struck there, and let them have but little more depth than the side segments.

Book V. These will not reach nearly to the ends of the central compartments, they are therefore to be joined to it by a bar; and this gives the whole compartition: the ceiling is disposed into a variety of figures, and all handsome.

C H A P. XII.

Of decorating the compartments of the preceeding ceiling.

IF the whole of the ceiling thus divided by mouldings marking the compartments were left quite plain, nothing would be perceived too vacant except the great ellipsis in the middle: therefore let a flower be added there, and the rest left unadorned, and you have the plainest form of such a ceiling.

Sculpture added to the mouldings will give to this a grace, as to the others; and different degrees of expence may be allotted under this head.

As there are bars to connect the ends to the central compartment, there may be, with perfect propriety, something added to connect the sides to the same central part. As they touch they cannot be united by any intermediate figure, but they may be represented as buckled together, or fastened by a broad belt. This being made large, may have a lion's face by way of finishing, and will give a very great and noble air to both parts.

The corners which are enlarged by the retrenching of the end segments, will receive a very beautiful ornament of figures, such as we last mentioned, boys or virgins to the waist, and from thence terminating in scrolls, wound about with a wild freedom.

These several decorations we have added in different parts of *Plate LXXVII*, and from these the whole may be executed in the plain or variously decorated manner.

C H A P. XIII.

Of ceilings of more expence.

WE have at large delivered in the preceeding sheets the method of decorating ceilings at a moderate expence; and, beginning with the most plain and simple, have, we hope, led the student in this elegant science gradually to a sense of what is required, and why it is required, under these several articles.

The first we proposed to him were divided but into a few parts, and therefore of easy distribution; those of the succeeding number were somewhat larger, and thence required more division. We hope he has understood the principles on which that division, in its gradual advance, has been founded; and requesting him to bear in memory those several rules, we shall here enter on the larger and more elegant ceilings, the sum and extent of his profession in this great and difficult article.

We will suppose he is called to design a ceiling for a large and high-finished dining-room.

This, according to the fancy, or, if the reader please to call it by a better name, the taste, of the proprietor, must be either of the great and solid, or of the light and airy kind. Not only the fancy of the proprietor is to be consulted, but the other ornaments intended for the finishing the sides of the room: where these are noble and regular, what we have called the great and solid manner will be proper for the ceiling, for that will be all truth and regularity, and will therefore correspond with them; but where the flights of fancy have been admitted on the sides of the room, it will be best to give a loose to them also in the ceiling.

This compliance will be sometimes necessary; for the owner of the house has an undoubted right to please himself: and where *French* decorations have been admitted on the sides, the architect of judgment would no more place a *Greek* ceiling, than he would support a *Gothic* arch on *Corinthian* columns.

We advise the student first to establish in his own mind the great superiority there is in the true and noble ornaments, over these petty wildnesses; but we must advise him also to understand the construction of both: for unless he can conform himself to fancy, as well as work with judgment, he will do little in an age like this.

Having thus far explained the essential difference between ceilings of taste and those of fancy, we shall in the present and succeeding numbers, illustrate each with designs suited to larger and more expensive rooms: but having given the reasons why that which is not strictly right, may be sometimes preferable to the nobler kind, we shall advise the architect, on such occasions, to make a drawing of each; and, laying them before the proprietor together, to explain the dignity of the one, as well as to illustrate the fanciful decorations of the other.

C H A P. XIV.

Of a large ceiling in the true taste.

WE introduce the architect, on this occasion, into a spacious room, the first in elegance of the intended house; and as nothing is determined in this beside the measures, we suppose there is nothing to limit or cramp his genius; but he is left to the full merit of his invention, and may display all his knowledge.

In this case, let him explain first to the owner the necessity there is of a conformity in all the parts of a room; and the superiority of a ceiling in which there is judgment, to one where nothing rules but fancy.

When he has gone thus far, let him propose the other finishings upon the plan we have directed, according to the rules of the science, and then mark out his ceiling.

The room we suppose lofty and large: let him consider first the distance of the ceiling from the eye; and adapt all to it.

In very large works small parts are unnatural, and always appear poor; therefore in this ceiling the distribution should be into large compartments: and, as there is distance, let there be also some depth in them.

The advantage of light and shadow will be given by this means; and, when the parts are thus proportioned, it will have an effect of which a smaller piece of work is not capable.

At the first sight, it would appear, that in proportion as this ceiling extends in length and breadth to a greater space, the division should be into more parts or compartments; but, against this stands the rule we have just laid down.

To be more they must be smaller, and it is fit on the contrary, that the parts of a great work should be all great.

Their extent gives the advantage of that depth we have named, which, if allowed to such compartments as were smaller, would throw all into confusion: far from giving an advantage from the shadow, it would do great damage; and these small parts, seen from the distance of the floor, in a room thus lofty, would look smaller than they really were.

For all these reasons, it will appear absolutely necessary, that the parts be few, in order to give them a due extent in bigness.

OF ARCHITECTURE.

C H A P. XV.

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Of the division into compartments.

IN this ceiling, extensive as we suppose it to be, we shall, for the reasons before given, admit few compartments. We have directed the student, in those smaller kinds we have treated of before, to make the distribution by a centre, two ends, and two sides: and we shall admit no more in this, which is of the largest kind.

This gives the general distribution.

The central compartment, and its two end compartments compleat the division, as well as distribution, with respect to that principal part of the ceiling: but it cannot be so with respect to the two sides. Pannels running the whole length would be monsters in disproportion, as great as the *Gothic* tall and slender columns. The student has seen this part of the ceiling broken into three compartments, in those of a smaller and plainer kind; and we shall admit no greater number here: The distribution and mutual proportions of them only will be different.

The principles thus delivered, we shall now bring our student to the practice.

Let him first mark upon paper the extent of this ceiling, and then divide it by three strait lines drawn lengthwise into a central part, and two sides: let him so place these lines that the central part be, according to its importance, larger than the side ones; and then let him by two cross-lines drawn from one of the out-lines to the other, divide it again into two ends and a middle. Let these ends bear an over-proportion to the middle; for that will always give the whole ceiling an air of more extent: and we shall shew him how to make the central compartment in this distribution very considerable, and conspicuous in the greatest degree, above the rest, without swelling it out to occupy the whole ceiling in a manner, and to take from the needful extent of all the others.

Let our student comprehend this perfectly: on one article in good works, depend in a great measure all the others. If he were to allow that great proportional scope to the central compartment in this ceiling, which we have directed in some of those in smaller rooms, where the whole is nearer to the eye as the room is lower, he would render impracticable the rule with which we set out; namely, that in so great a work all the parts should be great; for, by such a first division, the end and side compartments would be little, and they could not admit that depth we have advised, because the light would not fall kindly in it.

Now then that these several articles are considered together, four strait lines, drawn as we have directed, mark out the compartition. The ceiling is distributed by those few lines into nine compartments, and they have a regular and agreeable proportion.

The

Book V. The particular measures are left to the judgment or the fancy of every one. It is enough we have directed that the central part shall be broader than the sides, and the ends in the cross division longer than the middle: the whole is thus thrown into this form, a square in the middle, and a long square at each end of that; and the sides each into three long square pannels of which the central one is the shortest. All this is done by the few lines we have directed to be drawn, and if no more were done than the running slight mouldings along the ceiling in this form, it would have a very pretty effect; so much beauty is there always in simplicity and proportion.

This however is not the intent of our present distribution.

C H A P. XVI.

Of finishing the pannels.

THE first objection that will occur to a person of taste upon viewing our ceiling thus marked out into compartments, is that they are too uniform. He will say simplicity is beautiful, but that there is a degree of it too great; and he will name the objection rightly in this place. We do not intend to leave the ceiling thus; for the marks are only the first out-lines; but he will see by what is to be added in this respect, how easy it is to give variety and grace, where the original design is just.

The second objection would be that the central part was not enough considerable; and this would be as just as the former: we are prepared to avoid the censure, and the same thing which answers the one of these objections serves equally for the other.

The square in the centre is not intended to remain in that form, for we propose the central compartment to be circular.

Let the architect fix his compasses in the centre of this square, and strike with them a complete circle: let this be so large that it inscribe the whole square, except four small corners; and let him then, at due distances, inscribe circle within circle, as the marks of the succeeding mouldings.

This takes away the only two objections to which the compartition we have directed could be liable; it gives variety, and it adds a look of importance to the central part which is always necessary in a good distribution.

The student will understand that this is not a circle within the limits of the square, for that would be poor and little. This which cuts the outline of the square near its corner, is of much greater extent than the whole square was, the outline which is between those corners swelling greatly beyond the natural side of this square: it reaches in this manner completely to the ends and sides of the two end and two central side pannels, and fills the midst of the ceiling with grace, dignity, and proportion.

A due depth is to be given to this circle in the centre, and it will then have an air of elegance which will not fail to strike even the injudicious. Chap. 16.

The outline of the square, which was the first figure marked in the centre, will be thus swallowed up in the sweep of the circle, excepting the four corners; but the rest of the lines marking the general distribution will remain exactly as they were.

These, though they mark the places of the several pannels, are not their proper outlines; for, in that case, they would unite and crowd upon one another. A plain space is to be left between them, and it must be of such a breadth as to receive ornaments: what those shall be we will direct hereafter: we are here treating only of the distribution and place of the pannels.

Let each be marked in now within the lines which made the first division; and let the outline of their extream mouldings be kept severally at a due and equal distance: then let the inner line describing the breadth of the mouldings be marked; and the depth of the pannel, that is the projection of the moulding, considered.

The whole outline will be now marked, but there will remain the first lines of distribution; these perplex the eye, and they have now no farther business on the paper. Their intent was to direct the student in marking in the compartments, and that is done; they seem to unite the several pannels, or to divide the proposed space of their partition into two; and either way they perplex the sight or offend it.

Let them be taken out with bread; and the whole is then seen in its true form.

The several pannels have their proportion; and they are separated every way by a blank space which shews that proportion.

Every thing is now done which regards the distribution of parts in the ceiling; and the architect has the scheme of the work he is to decorate.

C H A P. XVII.

Of decorating the pannels.

IN a distribution so just as that we have laid down in this place, there will not require that great degree of ornament which is often needful to hide the faults of a first partition : it will be graceful in the plainest execution ; but it will also receive every degree of ornament that an expensive taste can wish to throw upon it.

If the compartments are executed with plain mouldings, and the space which divides them left wholly unadorned, the ceiling will have an air of grandeur ; and in this form it may very happily suit a large room, where the finishing of the sides is plain : but this, though not ungraceful, is poor to the full glory in which it may appear under more rich additions.

We propose to lead the student to the execution of these ; and he is to consider them under the three following heads : first, the decoration of the verge of each compartment. Secondly, the enriching of their inner spaces : and, Thirdly, the adding ornament to the plain part which separates them.

These may be considered as three stages or degrees in the ornamenting and enriching the present ceiling.

If it be intended for the first or smallest degree of decoration, let the mouldings of all the compartments be enriched with sculptured parts, and let these be bold and great, answerable to the design of the whole, the measure of the parts, the proportion and distance.

All these considerations require they should be large and strong ; and, in the present purpose of a decoration not too expensive, let them be plain.

C H A P. XVIII.

Of enriching the compartments.

IN the design just named, the purpose has been only to decorate the mouldings of the pannels, or to give them a handsome edge ; while the space between, and the inside of the compartments themselves is left plain.

These parts are intended occasionally to be the scene of ornament, and it is that addition which forms the second and the third degree of ornament.

With

With respect to the principal or central compartment, which is circular, if it have due depth, and a large expanse be taken up about its verge and in its mouldings, the inner part, and the breadth within the outer verge and the mouldings may all be left plain. Chap. 18.

The centre of this circle will very well receive the pulley of a lustre, or if no such piece of furniture be in the room, there will be no fault in its plainness.

Let us next lead the student to the decoration of the end pannel, that is, the principal square compartment, which terminates each way the circle, and reaches the rest of the length of the ceiling.

There are two of these; but we speak only of one, because the ornaments must of necessity be repeated in the other. These are the two largest square compartments; and, next to the circular one in the centre, they are the principal parts of the ceiling.

We suppose them already terminated by handsome mouldings, for that was the decoration of the first degree. Within these is the vacant space of the pannel, which we are now to enrich: in this we shall advise the student to aim at lightness and simple elegance: let there be no clutter of ornaments, no heavy figures, nothing massy, nor any thing large.

First, as the space is large, and we direct the inside decoration not to be so, the care should be to lessen its extent; this must be done by making as it were a pannel within the pannel: let a line of light sculpture be carried every way at equal distance from the inside mouldings, leaving a space between of moderate extent, and let this remain unornamented: the square for decoration is by this means reduced to a much smaller compass; and, to give all the advantages of light and shadow, concerning which we have spoke so largely on this occasion, the central pannel should have a depth greater than that of the rest of the ceiling.

In this let there be placed a very light festoon. The dignity of the work is to consist in other parts, therefore this should not be either large or very rich: its form should be regulated by that of the pannel, and as that is a long square, the best shape for this will be oval.

Let its bottom come toward that end of the pannel which is nearest the central compartment, and let its other end be tied in a loose free manner with a cord or ribbon.

This, well understood, will lead the architect to the finishing of the rest, for they are only smaller pannels of the same general kind.

On each side of this principal compartment, there is a smaller. These are of the same length, but much narrower, and are separated by a proper space of division: let the ornaments in these be like those of the principal which is between them; not so

Book V. servilely like as a copy, for that would not suit the shape of the pannels; but let the ornaments be accommodated to them, and correspond with the other.

If a compartment were made within each of these, and a festoon placed in it, that would be a gut by its great length; and the want of breadth would deny it all possible beauty: therefore let it not be done.

Instead of one long pannel within the compartment, let there be placed two smaller; one at each end of it, and between these let there be space for a festoon.

Let these pannels be enriched, in the same manner as the others, with a light edge of sculpture; and let them have more depth than the space between, which receives the festoon. This will give in the whole a very pleasing variety; and let the festoon be of the same shape, though smaller, with that in the principal square.

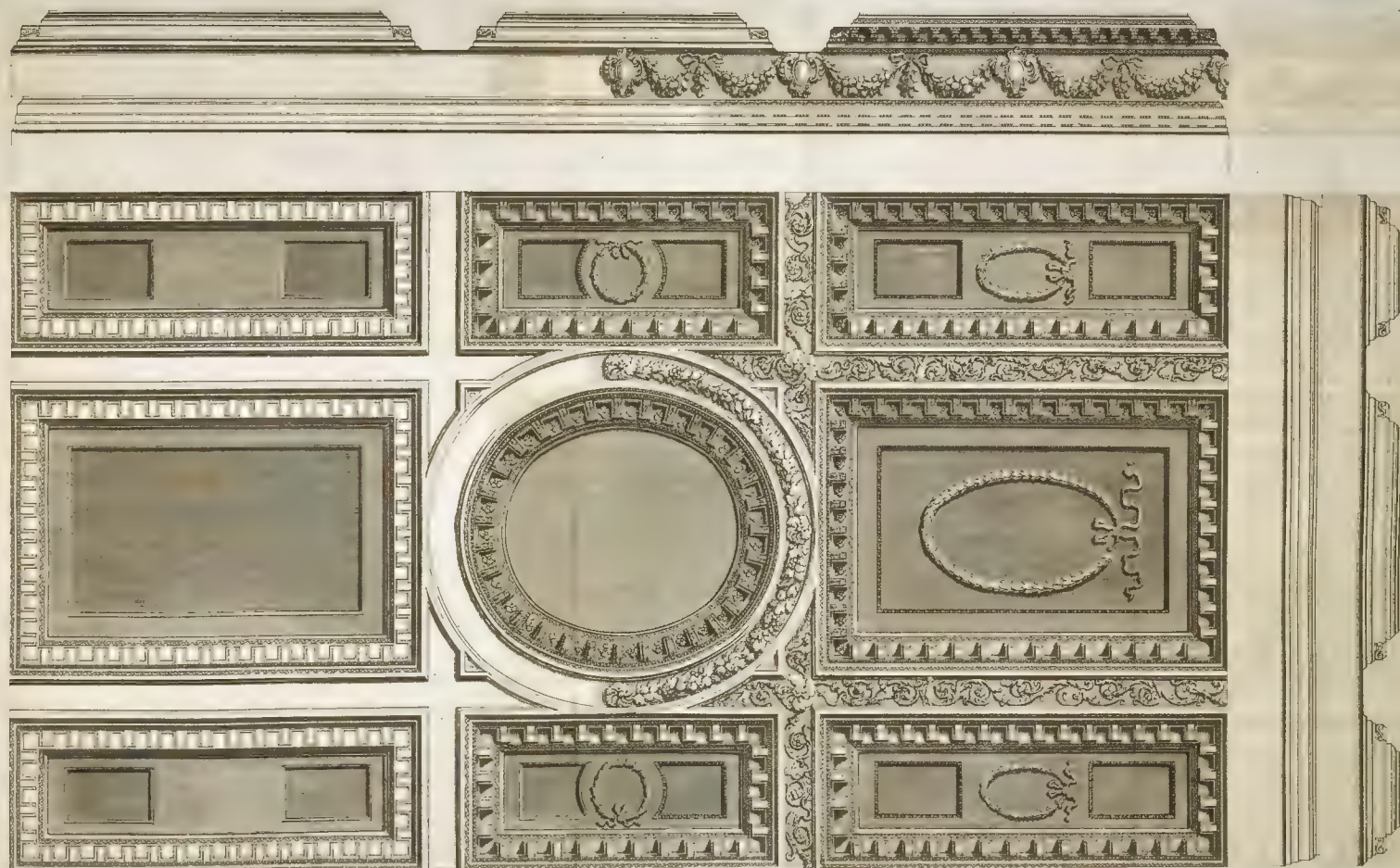
Thus will the three principal square pannels be filled; and there remain only the two smallest, which terminate the central circle the breadth way of the ceiling.

Let these be decorated in correspondence with those already named, but still let there be a variation; for a perfect sameness of parts is fully as disagreeable as a rude unlikeness.

Let there be two small pannels formed within each of these larger, and let their fronts, which come toward one another, be cut out with a sweep; this will give room for a festoon, which should hang cross-wise, not lengthwise, as the others; that its bottom, like the rest, may be toward the verge of the circular or central pannel.

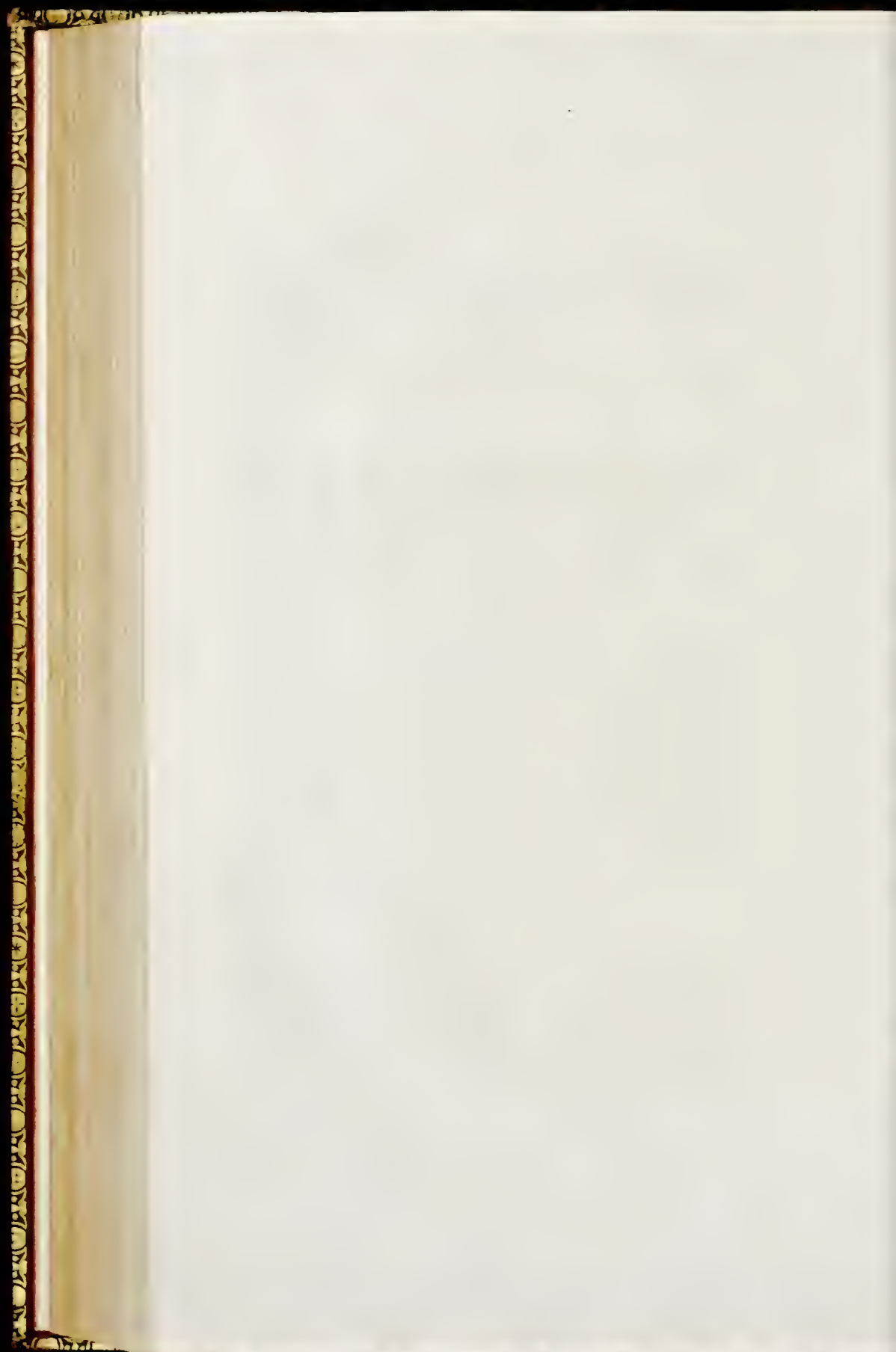
The last degree of finishing to be added to this ceiling, is by throwing some ornaments of scrolls into the spaces which separate the several pannels. This will give a compleat richness to the whole; and thus we have represented it in the annexed figure, illustrating our rules by the practice of *Inigo Jones*.

The several degrees of finishing may be seen in the different parts of the figure, which, for the use of the practical architect, we have compleated in different degrees.



A Ceiling of Inigo Jones, in a Dining Room of Sir Mark Poydell's, at Coteshill in Berkshire.

1 5 10 20 feet.



C H A P. XIX.

Of decorating a cieling with mixt figures.

THE architect is to understand by this term the division of a cieling into compartments and spaces: that is, the placing it in a number, greater or less, of compartments; which, filling the whole extent, leave spaces of accidental, but not irregular figure, capable of decoration in the manner of compartments, and naturally setting them off by the variety.

They are accidental because they are not laid down by lines, but result from the disposition of the other figures, and they are regular; that is, proportioned in size and disposition, because those figures to whose out-line they are owing, are also regularly placed.

To reduce this to practice, let an architect, in a cieling of any given size, mark out a central compartment of moderate dimensions, and, at equal distances, place four small compartments at its edge. He will then see the general idea of this division with mixt figures; the few regular compartments will be accompanied with fewer intermediate spaces, and these will be large and capable of any decoration: they are the four parts of the cieling, circumscribed by its proper out-line, and by the verges of the compartments marked within.

With respect to the size of these it is easy to err on the side of excess, but it is the worst fault; for, in that case, they give the whole a poorness, and an air of vacancy. The cieling still seems plain, and only to have the compartments lodged upon it.

On the other hand, when the excess of the compartments makes the corner spaces too small, the whole seems crowded with ornament without taste; for distance and freedom are the greatest ornaments of a good figure; and, if they are to be ornamented they can only receive a figure too small to be either fairly conspicuous from the floor, or correspondent to the rest of the cieling; or they must be crowded so as to lose the grace we have just named of freedom, which could only result from a clear space between the figure inclosed, and the out-line of the space in which it is included.

The student sees by this, that when these corner spaces are made too small by excess in size, or ill-chosen form of the compartments, they must be one of these three ways improper. Either they must be plain, and therefore not correspondent to the rest of a finished cieling, or they must be ornamented with a small, or a crowded figure.

For this reason, let him as carefully avoid the making them too small on their own account, as the suffering them to remain too large, to the hurt of the rest of the cieling.

Book V.

To reduce the rule to practice, he must observe, that if the small compartments be all four equal, as they will be in a square cieling, then the corner spaces are to be left so large that they just receive one of those small compartments: if the cieling be of an oblong square, which is the most usual form, then two of the smaller compartments will naturally be larger than the two others; and the rule, in this case, is that the corner space be of such extent, that it would more than receive one of the smaller, and would not receive one of the larger compartments.

This will depend principally upon marking out the first or central large compartment: we have here given the principles on which the whole division is to be founded; and shall now treat of the form.

C H A P. XX.

Of the shape of the compartments in this cieling.

A space being given for the form of a cieling, whether square or oblong, there will be three ways of dividing it, according to the preceding system: it may be thrown into figures all square; secondly, into such as are all circular; and thirdly into those which are partly square, and partly circular.

Now to make a choice properly in this respect, let the student keep in his mind these corner spaces, which, with their decorations, are to make a principal figure in the cieling.

He must consider that freedom in the out-line is the great article of beauty in these spaces, and this will at once determine him against the division into squares.

The out-line of the cieling marks two sides of each of these spaces, and these are therefore naturally strait-lined sides: if the compartments were all squares, the inner as well as outer lines would be strait, which would give a stiffness, and there would run into each a disagreeable sharp corner.

This would be, upon the whole, a very unpleasing, irregular, and harsh figure; therefore, in the present case, the first of those three divisions of which the cieling is capable, is utterly to be rejected.

With respect to the division mentioned under the third head, partly into square, and partly round compartments, it is not liable to the same weight of objection with that into all square ones; but it is still very faulty.

There are but two ways of executing this division; either the central compartment must be round, and the four smaller square, or the central must be square, and the four smaller round.

This last is a very bad contrivance in itself; for the circular being the most perfect figure, the principal should be that; but, besides the impropriety in rule, and the disagreeableness of the general appearance, this, in the present instance, would be very improper; for it would still thrust those sharp corners into the four spaces between the smaller compartments, which we before named as the principal objection to throwing it into all square figures. Chap. 22.

For all these reasons therefore, this method of division is to be rejected.

In respect of the other, in this mixed kind, that is, the making the principal or central compartment round, and the small ones square, it is liable to fewer objections, but still it is not the method to be preferred.

In this case, the student will find he is rid of those deforming angles, which ran into the corner spaces when the principal compartment was square; but he will find, that although, instead of the ungraceful figure resulting from that combination, he has, opposite the angle made by the out-line of the ceiling, a convex or swelling figure to terminate the space; yet, at its two intermediate parts, the harshness of the straight line of the square returns, and there will be unavoidably a hollow angle which he can never fill up, because of its smallness, and which will be always ungraceful.

These rational objections to all the proposed figures, throw us naturally upon that division of the ceiling we mentioned in the second place; which is, that all the compartments should be round.

This is the true form of a ceiling whose corner spaces are intended for decoration in the present manner.

Let the student, for his satisfaction, first try the several others; all the distributions and figures we have named, are easily marked in upon paper: and he will, by that, have ocular demonstration of the propriety of our remarks.

When he has convinced himself of the defects in these, let him try the other by making all his compartments round, and he will in that find every thing as graceful as it was unpleasing in the other; the four smaller figures will agree perfectly with the larger, and the corner spaces being made of the proportion we have directed, will be conspicuous without nakedness; and their figure, formed of two straight lines as right angles, and three convex ones, formed by the verge of the principal and two of the smaller compartments, will be very pleasing, and happily suited to the reception of any kind of ornament.

C H A P. XXI.

Of the manner of forming the compartments.

THE architect having now convinced himself, not by our words alone, but by his own pencil reducing them to the test of lines, that no distribution under this intent can be so proper as the throwing the whole into circular figures, will begin to consider of their proportions and construction.

A square cieling may be thrown into this form, but the most proper one is the more usual form an oblong square.

The reason of this preference will be seen if the student will again reduce the proposition to the test of lines : the square spaces at the corners are a principal consideration here, and when the cieling is square, the figures of the compartments being of equal diameters, the corner spaces will be also exactly alike in their parts.

This will give a sameness to the whole, which by no means agrees with those ideas of freedom and variety we have endeavoured to impress upon the student in this article.

On the contrary, when the four small compartments are alternately larger and less, as they must be in an oblong cieling, the central figure being a circle, there will result from this a pleasing wildness in the form of the corner spaces ; their breadth, when they are terminated by a larger compartment, being greater than where they are closed by one of the smaller ; and the two small ends and two large ends of these spaces being placed naturally and necessarily against one another, there will be a perfect connection of parts, at the same time that there is this agreeable diversity of figure.

We will suppose our student now to have perfectly made himself a master of the theory of this distribution, and shall lead him to practice in a cieling of that form which we have said best suits the division, that is, an oblong square.

Having marked in the out-lines of this upon paper, on a proper scale, let him first strike in the centre a large circle, and surround it at due distance with several other concentric circles, gradually larger for its mouldings ; and this being struck and finished to a due size, will leave but small depth for the others, especially for those at the sides of the cieling : but it is easily remedied.

If more space of depth were left for these, the central compartment could not have its due bigness, which is the first article to be considered ; this being allowed, though at the expence of the space for the smaller compartments, we are to contrive in the best manner to make up that deficiency.

We will suppose a festoon is to be used as an ornament of the outer part of the principal compartment, and the same kind of decoration with mouldings to be carried also round the verge of the cieling: any other decoration may be used at pleasure, but we name this because it is the ornament used in the figure with which we have illustrated this compartment of the cieling. Chap. 21.

This being marked in upon the paper, and the extreme line of the circle in the centre finished, the spaces between them will appear very small at the sides, indeed too small to admit a proportioned compartment at the ends of the cieling.

Here the liberty of the artist is to be used, and the compartments are not to be circumscribed by the allowed too narrow limits of the space; if more had been allowed, the central compartment would have been too small, and the whole figure ill-proportioned: and this, which gives a due extent to that part, and conformity throughout the whole, is limited too closely by these ornaments or mouldings.

Therefore the freedom of the artist, taking its plea from necessity, commits a smaller fault to avoid a greater, and carries the out-line of these lesser compartments into those ornaments.

The student, knowing he may do this, is to fix his compasses in the centre of the absolute space, and extending one of the points to touch the very out-line of his cieling, is then to strike the circle which is to be the out-line of this small compartment.

Let him draw this out-line carefully, for to be elegant it must not be compleat: it will, at the edge of the figure, cut through the festoon that marks the verge of the cieling, and all its mouldings; and hence it is to be carried to the edge of the circular verge of the principal compartment. If it were carried on it would here also cut thro' the festoon, and some of the mouldings of this compartment; but this, at the same time that it offended the eye by its harshness, would rob the architect of the means of a great beauty.

Within this line let him strike two or three concentric ones, imperfect as the first, and terminating at the out-line of the principal compartment; and within these, let him leave the place of a festoon, whose out-line must terminate also with the rest. These are all the imperfect lines he need strike.

Let him now leave a due space for the thickness of the festoon, and then mark its inner space entire; let him then strike two or three smaller circles at due distance within that for the mouldings; and then, taking off his compasses, let him observe the figure.

If the out-line of this small compartment had cut deep into the principal figure, as into the ornaments of the verge of this cieling, then this principal figure would have been wounded in four parts, and nothing being entire but these small compartments, it would appear as if they had been the principal forms.

Book V. Another construction, very unpleasing to the architect, might also arise from this, which is, that a common eye would suppose he had made his principal compartment too large, and had been forced to intrench upon it afterwards by the others.

An architect should guard even against false censure; and, in the present case, he will, at the same time that he avoids the apparent fault, find he has given the cieling a considerable beauty.

He will see, on thus examining the figure, that the cutting through the ornament of the edge, far from having any ill effect, very agreeably breaks the verge out of four strait lines, into four handsome corners; and that the spreading of the ornamental parts thus to the verge, far from hurting the eye, enlarges to appearance the whole cieling, and gives extent to the ornaments, and richness to the entire form. So many beauties may sometimes result from a freedom taken against strict rule, at the command of necessity.

On the other part, he will find that by this method of leaving the out-line of the small compartment imperfect at the larger, the festoon of the smaller will meet the festoon in the verge of the larger; and each losing half its thickness, the two will form the depth of one; and thus there will result a union and combination of the lesser and larger parts, so perfect that they will seem to rise out of one another. The five compartments will not seem so many detached pieces, but parts of an entire figure, and there will be that uniformity and regularity which gives the greatest grace to all distribution.

One of the four smaller compartments being formed, the rule is evident for all the rest; they are only to be struck upon the same plan. The circle opposite to that which is first formed must, in all things, correspond with it, for the space it is to occupy is exactly the same; and, for the construction of the other two, nothing is needed but a little more opening or closing of the compasses; for the form and figure, and the manner of finishing each line, proportioning the whole to the space, is the same.

These lines being all struck, let the student take a review of his work before he proceeds farther. He will see, under this view, a cieling circumscribed by the form of an ornamented verge, and decorated with the figures of five proportioned circles. The corner spaces will be of a good shape, but they will appear large.

This is because they are plain: it is enough for the present condition of the drawing that he sees proportion in the several figures; these spaces will not appear too large when they are no longer vacant: this is a cieling intended for ornament, and therefore it is no matter that it does not perfectly please in this part while plain.

We shall proceed now to consider the method of decoration.

C H A P. XXII.

Of ornamenting this cieling.

WE have, on the preceeding occasions, given the student his choice of allowing more or less decoration to the designs we have laid before him. They have been intended for general examples, and were therefore calculated for general use, suited equally to be left plain, or finished with more or with less ornament; but here we speak of a particular kind, in which there are many things to illustrate the general rules, but which is yet one of those where the quantity of ornament is limited. A bad taste may load such a design with foolish figures, or a poorness of imagination may leave it raw and vacant; but, in either case, any one who was a judge of the science would exclaim to see so good a design so ill finished; and even the vulgar eye would be disgusted, tho' without perceiving why.

There is a middle degree of decoration proper to such out-lines: this may be varied in kind as much as the inventor pleases, provided he keep out of absurdity: but it must not exceed, or fall below, a certain degree, if he would hope to satisfy the eye of taste, or please the common observer,

The first point to be determined in the bosom of the architect, is that the ornaments may correspond; that nothing may be admitted in one of the compartments which may not have a place in all; and that the decorations of these be such as, without impropriety may be admitted in the verge of the cieling.

Upon these principles, it will not be easy to err, and almost impossible to miss of attaining a great beauty.

C H A P. XXIII.

Of the proper kinds of ornament.

WE have named, in speaking of the construction of the several compartments, the festoon, as a proper ornament; and we shall here direct the eye of the student, from the frivolous decorations which *France* has furnished us, to those which dignified the works of *Greece* and *Rome*, and have been an honour to the names of some of our own architects in times of better taste.

We allow the licentious rolling of a festoon, when it is to spread through a large vacancy; and will permit it to be wildly formed when nothing circumscribes its edges; but the present case is quite different.

There is no extent of space to fill with a festoon, nor any licence for its spreading out at the edges: it is naturally and necessarily circumscribed, being used only as an ornament between mouldings: we shall therefore here refer to the strict taste of the old *Greeks*.

Their festoon was a plain wreath of oak, or some other tree, but none in general so well as the oak, because its leaves were of a moderate size, and not ungraceful figure; and the use of acorns in their cups, and of their cups in some places without them, added greatly to the variety.

Such a festoon we shall direct for the principal decoration of this ceiling; and this we shall advise the architect to lay between his mouldings of the verge of the ceiling, and round each of the circular compartments within their outer circles.

These are the festoons we would have united where the larger and smaller compartments intersect one another; and, in these places, they will naturally admit a very pretty ornament, in form of a knot or ribband, to tie them together.

Thus let the student lay the plan of his ornaments to this elegant ceiling; the connection and agreement of the several compartments, and of the whole ceiling, will be very pleasing; and the eye, running from one to another without confusion, will at once comprehend the whole, and admire its several parts.

We have said there is a certain depth of ornament appropriated to this ceiling; but in that expression we have not meant to limit the architect to a stroke of the ornament in the lesser parts.

The inside decoration of the great compartment must be well finished; we do not mean the decorating the plain space within that circle, but the finishing of those mouldings which are between the festoon and the inner verge.

These must be large, bold, and enriched with sculpture, and the rest gradually lighter to the festoon, and thence still lighter to the outer edge; but still, in all this lightness, there must be ornament. Chap. 23.

The smallest mouldings will admit of sculpture; and this should not be denied where the ceiling is of the richer of those two kinds we shall allow as practicable with, and proper to this design.

These differ but by slight accidents in the sculpture.

The plainest way of finishing the ceiling of this distribution is, that the central parts of the several compartments be in all left plain, and the mouldings with which they are surrounded be also plain, excepting those which are within the festoon in the principal compartment.

In this case the spaces at the corners must not be plain, for they are intended for the reception of ornaments; and, if left plain, would appear too large for a due proportion; but, as less is allowed in this design than in such as are more enriched, it will be proper, by way of appropriating this part, to place in each corner a small and very light ornament.

Thus the ceiling would be finished with its proper decorations at a less expence than it might reasonably demand; but we shall, in the succeeding chapter, give that degree of them which appears more finished in the several parts; and which we shall advise the architect to follow where he is to work such a design, and is not too strictly limited in the article of expence.

Of decorating the compartments in a richer manner.

UPON this plan of a proper degree of decoration, and where the genius of the architect is not limited by the regard of expence, we shall propose not to load the cieling with ornaments, for that we have already declared improper, but to enrich it elegantly.

In the first place, the mouldings of the compartments come under consideration.

These must not be all plain, as in the first instance; nor all decorated with sculpture.

It is in these determinations genius displays itself. The common architect, as soon as he had received his unlimited commission for enriching the cieling, would crowd in as much sculpture as he could into the several parts, and the more he put in the better he would think he had executed his purpose.

On the contrary, the enriching every moulding confounds all. There is a sameness that displeases; and the eye that should admire the elegance of the whole, is lost in the perplexed multiplicity of its ornaments.

In general, let one of these mouldings be carved, and the other plain;

The account is to be begun from the outer and inner moulding toward the festoon, for in each of these the plainness of the flat of the ceiling relieves the sculpture, and there is the proposed variation to suit the whole to the eye.

Thus with regard to rest, the simplicity of those left plain will appear with great lustre among and between the carved ones; and they will, as they were calculated to do, set off mutually one another.

The festoon naturally falls next under the architect's consideration, and he will do well to consider it thoroughly. The entire wreath is, in these cases, supposed to be round, but it may according to the height of the other ornaments, project in a various degree from this cieling.

Half is called an unexceptionable measure, but there is too much of stiffness in it under that form: less than half appears poor; and the greatest beauty is to give something more. It need not be much more, for the eye cannot distinguish the exact degree, but if there is a flatness in a split festoon, the giving it some projection above the extreme diameter, throw it forward, rounds and finishes it very happily.

As to its construction, we have recommended the oak for the subject, but there are two others which may be used, the beech and the chefnut; each of these has its fruit, which may be intermixed with the foliage: and in the chefnut there is, beside the largeness of the fruit, and its peculiar form, which is rudely represented in our eggs and anchors, the advantage of a distinct kind of figure, the catkin: the leaf also of the chefnut is extremely beautiful, its figure, serrature, and point, all conspiring to recommend it to the eye. Chap. 24.

The beech is the smallest leaf, and has the least conspicuous fruit of the three; it is therefore in general the least eligible; but let not our architect judge therefore that he is to reject it utterly.

Different forms are suited to different purposes; and there may be use in all.

To give one general rule, let him proportion the kind to the thickness of the festoon, and its distance from the eye. These, in good architecture, will be proportioned to one another; and therefore the consideration of either would have been sufficient.

If the festoon is very large, the chefnut is the proper subject; and let the architect learn its true form, both in leaf and fruit, from some of the botanical writers. When it is of a middle kind in respect of bigness, let it be made of oak, and when least of beech. Therefore, when most remote from the eye, let it be chefnut; when at a middle distance oak; and when very near beech.

This distance, which we call the middle, between the very remote and very near, is the most frequent; and therefore the most useful ornament is that which suits it: this makes the oak most generally used, and most generally proper; but, even in this respect, the architect may shew his genius in some variation.

By the word oak, we express the tree of that name which is of our own growth, and with whose leaves we are familiarly acquainted.

This may be useful often, but there are others: the *American* oaks have sharper pointed leaves; and the *Spanish*, called by our gardeners the *Italian* oak, has smaller leaves than ours, and more deeply divided.

There is also another, a native of the mountainous parts of *Europe*, whose acorn is placed in a vast prickly cup; the leaves of this are also large, and they are deeply sinuated.

Of all these let our architect make choice, when he is determined to use the oak, suiting the kind to the purpose; this last-named species is fit for lofty festoons of great bulk; our own, or the *American*, for those of middle size and distance, within the limitation where the oak stands, according to the former distribution; and, for the smallest and nearest to the eye, he should chuse the *Spanish*.

The

Book V. The figures of all these kinds will be found in the writers on trees ; and the sculpture may thence be adapted to the purpose, and varied according to its place ; the architect all the time being able to justify himself upon the foundation of nature.

For this cieling, according to that height it best suits, which is that of a middling room, we shall advise the use of the *Spanish* oak leaf.

C H A P. XXV.

Of decorating the spaces.

THE festoon being fixed upon, and the degree of carving settled for the mouldings, all is done in the verge, and there remains only to decorate the central spaces of the pannels, and the spaces at the corners. In each of the smaller compartments let the architect place a flower ; and let it be boldly and largely imagined. Let it not stand clear within the space, but fill it, and roll up its edges at the inner line of the moulding. These being thus ornamented, let him leave the whole compartment in the centre vacant and plain.

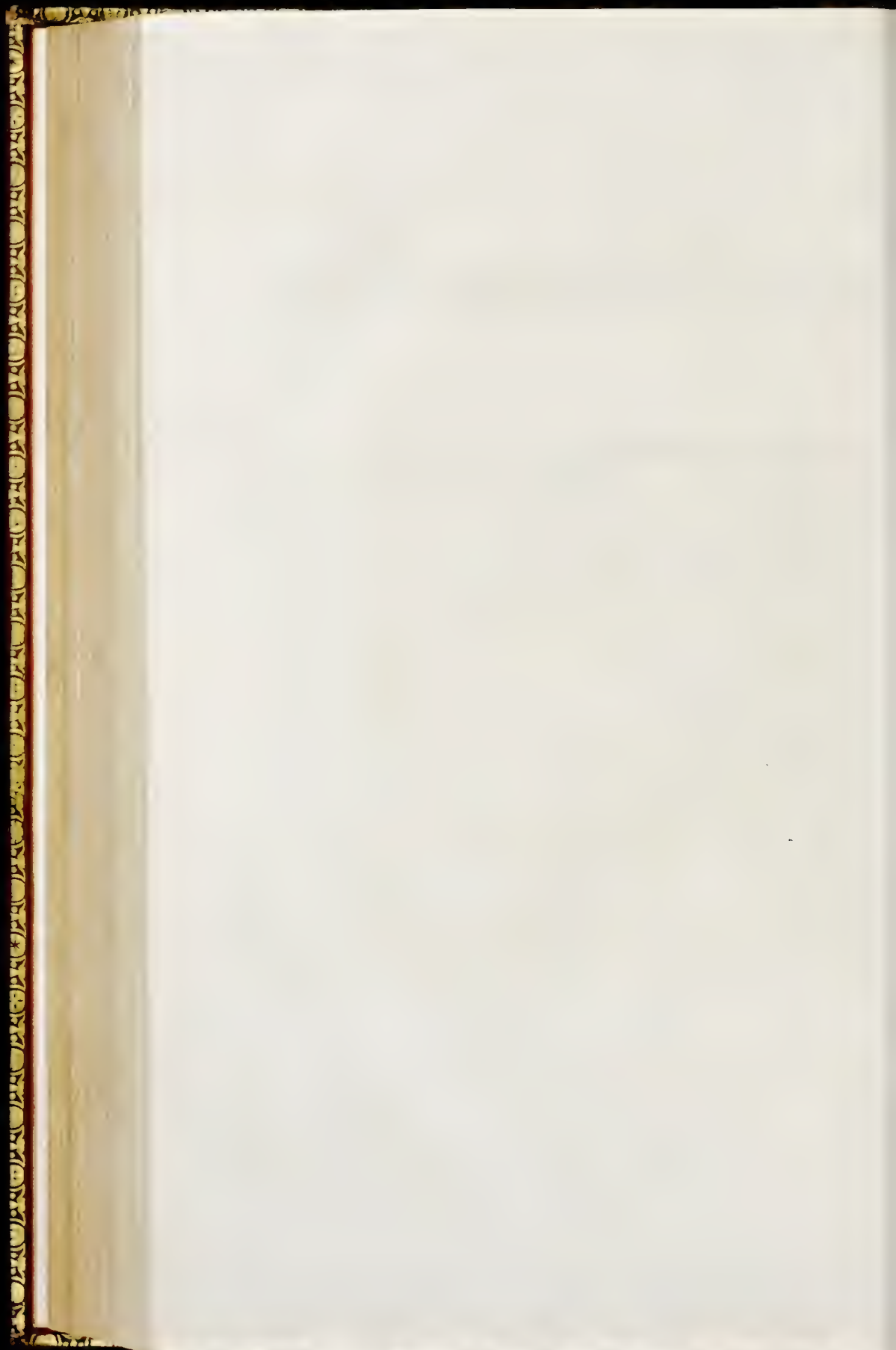
The reason of this will be understood from what we have just said of the decoration of the mouldings, that some plain parts are needful to set off the ornaments of the others. The small compartments are filled with sculpture, and in the corner spaces there are to be ornaments ; not such as will fill up the place, but such as will make a proper figure in it.

The reader has, in *Plate LXXX*, here annexed, a cieling of this form, on which the great *Inigo Jones*, always strict to rule where it could be observed without transgression, has employed his genius very happily in finishing such a design. The ornaments of the four corners are varied oppositely, and it would not be easy to conceive a decoration which could more happily fill the principal place, than those cornucopias with the caduceus which he has so happily thrown into them.



*A Ceiling of Inigo Jones's.
in a Bed Chamber at Sir Mark Poydells at Gresham.*

Feet 10 9 8 7 6 5 4 3 2 1



C H A P. XXVI.

Of decorating a cieling in a fanciful manner.

WE have spoke of the dignity and regularity of cielings, and have, we hope, established in the student's mind an idea of what is truth, grace, and proportion, in this elegant article of his profession. We have told him that it is a subject on which fancy may also sometimes take her loose; and we may now venture to lead him into all her wildnesses.

Where dignity and grace are consulted, let the room be decorated in the strict *Grecian* taste, for there alone perfect truth and purity of taste are to be satisfied; but, for peculiar purposes, we may allow the use of appropriated and particular ornaments.

In those rooms the cieling should be proportioned to the finishings of the sides, and to the ornaments of the door-cases and chimnies; but this, with its proportion, has always an air of solidity.

It acquires from that circumstance a peculiar grace and greatness on those occasions, but there must be other embellishments where the roof is finished in a lighter manner.

The *French* have furnished us with abundance of fanciful decorations for these purposes, little less barbarous than the *Gothic*; and they were, like that species of building, (for we will not descend to call it architecture,) received with great readiness: the art seemed upon the point of being lost in *England*: but a better taste has now prevailed. We should, in that danger, have declared for banishing whatever came under the denomination of *French* ornament; but, now we see it over, the art will be to receive these ornaments with discretion, to adapt them to the few uses for which they are proper; and to soften their luxuriant use, and blend them with better figures, till we have reduced them into a more decent appearance.

This we shall attempt in the succeeding chapters; and shall propose to the reader a subject upon which they may be employed, and a manner of employing them.

C H A P. XXVII.

Of constructing a cieling for a music room.

IN an edifice of extent and elegance, where there are apartments adapted to all purposes, it is natural to suppose one may receive an harpsicord or organ, and be destined to concerts, and other musical entertainment.

This we will suppose is to be decorated with an expensive cieling, and at once rendered rich and suited to the purpose.

It would be in vain to ransack all the writings, and all the remains, of *Grecian* and of *Roman* architecture, for such a cieling. They saw at once what was proper; and if one of them could be called from the dead, to answer why they left us no example or rule for this purpose? He would answer, because no ornament of such kind was judicious. He would say, sounds should be echoed back, not swallowed up in the surface of a cieling; and that a plain superficies would return the sound, while one thus enriched absorbed it. He would say, painting was the proper decoration.

The fancy of the proprietor, we readily allow, must be satisfied at the expence of this rigid propriety: he chuses a cieling enriched in the usual manner, and the architect he employs must draw his plan.

Let him take care that he remember the rules he is commanded to transgress.

As all raised ornaments are against reason, let him him set out on this first principle, that his be raised, on this occasion, as little from the level of the cieling as possible.

This first rule for his conduct naturally rejects the great and noble ornaments of which we have treated hitherto, and throws him upon a design of fancy.

The *French* figures are before him, and here is an opportunity in which he may introduce them with that blended grace and moderated beauty of which we have spoken.

A cieling stragled over with arched lines, and twisted curves, with OC's, C's, and tangled semicircles, may please the light eye of the *French*, who seldom carry their observation farther than a casual glance; but this alone is poor, fantastical, and awkward: it is a strange phrase to use for any thing from *France*, but those who have seen such cielings as we here describe must acknowledge it is just.

Instead of this unmeaning ornament, barely and nakedly scattered over the surface, Chap. 27. let our student consider first a graceful out-line; next a compartment; each of which may be formed of these kind of figures, softened by his better taste: and let him then find ornaments to intermix with them, to break the similarity of the figures, and to detain the eye that would be at once perplexed and wearied in following their mazes.

What these ornaments should be, the intent and purpose will remind him. Let him remember that this is to be a work of fancy merely; and that he need not fear the charge of absurdity, whatever liberties he takes with the more sober dictates of the science. With this free licence he will find an easy and a pleasing scope for an agreeable disposition.

C H A P. XXVIII.

Of the general figure of this cieling.

THE same reason which pleads against the use of bold projectures, on this occasion, holds also against a division into compartments. The mouldings terminating these would stop the course of the sound, and confuse as well as absorb the graces of the music. Beside, as the regular and proportioned decorations are to be banished on this occasion, it will be best not to retain their forms, but to throw every thing out of that road of method, where nothing is to be consulted but imagination.

First then, let the designer think of a central ornament; and, to give it freedom; let it by no means be angular.

It would be natural, where this was intended as the only compartment, to design it large; but that must be avoided, for so much of method must be observed, even in the works of fancy, that the projection must bear some proportion to the extent of the figure. Now as the projection must be slight on account of the sound, the compartment must be reduced in size for that reason.

Thus much being understood, let the student begin by drawing an out-line of the cieling in a certain scale; and then, in the midst of it, let him, by two centres, describe in faint lines an elliptic compartment.

The reason why we order very faint lines to be used in this case is, that they are not to stand. This is no more than the rude out-line made to be rubbed out in drawings of other kinds: it shews the extent, not the exact form, of the several parts of the ellipsis, for they must be marked in with softened curves in the *French* manner.

This central compartment being struck, the imagination of the designer will represent its unproportioned smallness as faulty: we have shewn it is necessary, and we shall acknowledge, that, if left naked, it would deserve that charge; but there are ways of softening imperfections into beauty.

Book V.

Let our reader remember what we have shewn him in the work of *Inigo Jones* when he intended a light ornament in a large compartment, he struck it in this manner too small for the space; and afterwards reduced that space to make it suit the ornament. Otherwise the extent would have been too great for the projection, or the idea of lightness lost utterly.

This was the method that great architect observed to reconcile difficulties; and this, although there be no resemblance in the forms, may be transferred into the present design. Let us consider the whole ceiling as one great pannel, in which there is a necessity of a slight and small central ornament, and let us take the same course he did in the same circumstance, reducing that out-line given by the verge of the ceiling, by inscribing, as it were, a great compartment just within it. This we have illustrated by the annexed figure, *Plates LXXXI, LXXXII.*

We do not yet speak of those ornaments which we have added; they are the consideration of a succeeding chapter: but refer the eye of the student to the plate on this occasion, to observe only the out-lines of the design.

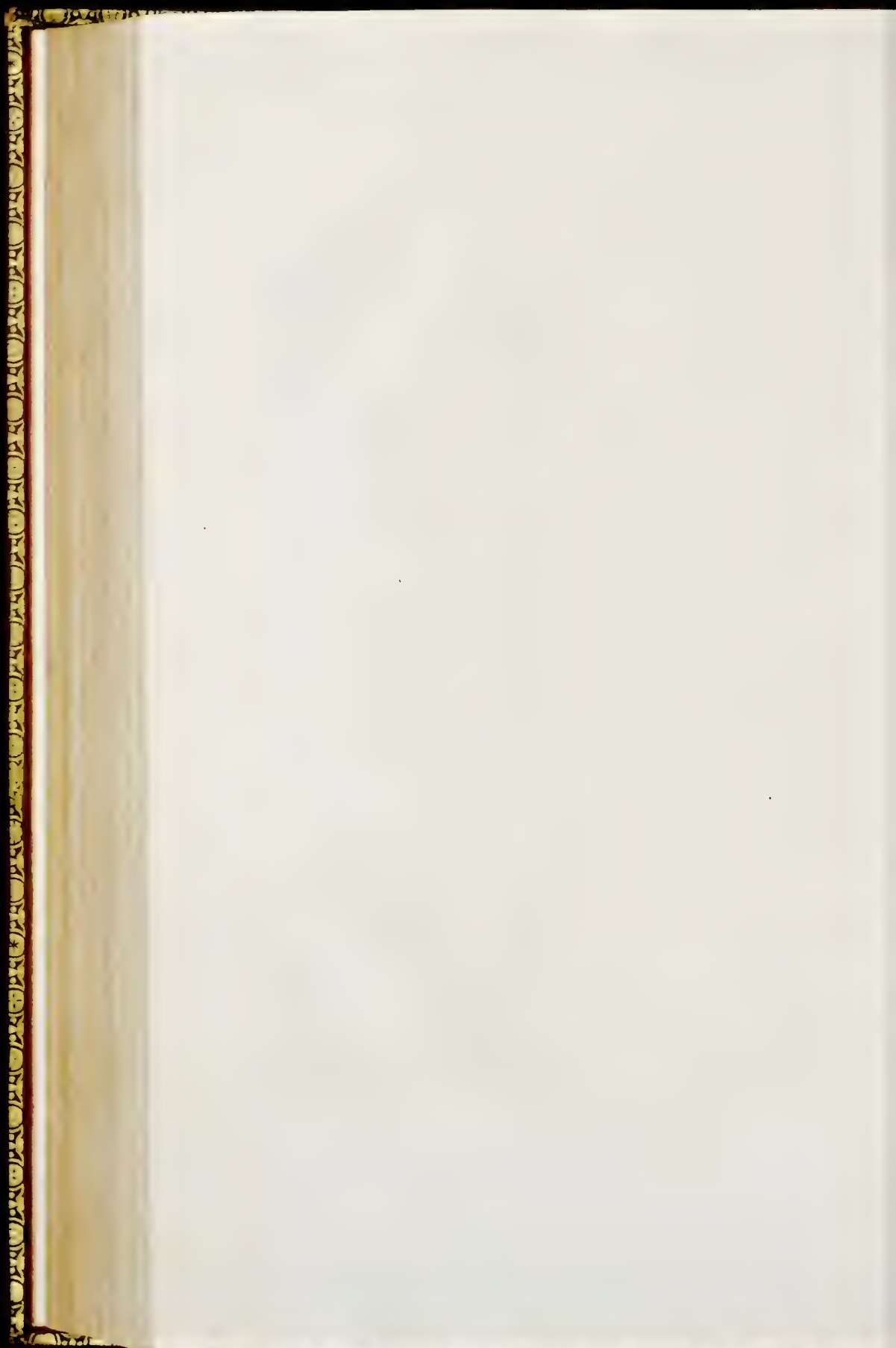
This great compartment, as it may be called, formed of the whole ceiling, by a figure somewhat correspondent to its out-line, and struck at a small distance within it, would, in the plainest way of working, make a long square.

Thus we see *Inigo Jones* has executed the same design in his work before given; but here the whole must be suited to a different taste, and consequently must have another form. Freedom and fancy are to be the characters; therefore the line must be varied, and we have shewn, in that instance, how it may be done at once, with wildness, and with a proportioned regularity.

Let the distance from the verge of the ceiling be first marked in each side and end, and then, instead of continuing a plain line along each way, let the four corners be cut in with a sweep, and, in the same manner, let a curvilinear figure take place of the line in the middle of each end and side.

Thus will the space of the ceiling, which was reduced considerably by the first determined line, be much more lessened by these eight projections into it; and their points, by a good management, may be carried in so far, that they may approach toward the verge of those ornaments which surround the elliptical compartment in the centre of the ceiling. The hollows made by these curvilinear figures at the sides and corners, may be easily and agreeably filled up with ornaments; and in this manner may be formed the division of this ceiling; which, although a work of fancy, will not shock the eye by any glaring impropriety, and will be agreeable with all its singularity.





C H A P. XXIX.

Of forming the lines of this distribution.

THE figure of the general decoration being thus understood, we may consider the nature of those lines by which each part is to be formed : we have proposed to introduce into this cieling as much of the *French* taste as is compatible with grace and propriety, and this is the part of the subject in which it must be displayed.

The out-line of the central compartment must not be the true contour of an ellipsis, that we have observed already ; but, upon the model of such an out-line, marked faintly upon the paper, it must be laid in by ornaments and scrolls, which shall, at the same time, sufficiently preserve the true form of the whole to the eye, and yet break it into parts ; which, in the place of geometrical lines, will give agreeable figures.

This was the original design of the *French* ornament ; thus it continues to be practised by those few in that light nation who have any conception of its intent and origin ; and thus we should, when we adopt their practice, follow it.

The out-line of this compartment will thus be formed of united ornaments, scrolls, and the like ; and these, to preserve the same agreeable variation, must swell out into a greater breadth in some places, and be contracted into narrowness in others. At the two ends they should be terminated by an ornament of wild leaves ; and, on the outer part here, we may venture to introduce those forward and backward (C's) in which the *French* so much delight. They err in forming every thing by these figures ; but, in so temperate a use as to terminate the ends of an elliptical compartment, a more sober judgment may bear them.

When the student has thus finished his two ends, he will find the figure lengthened beyond proportion, by these which appear parts of the out-line ; and he will be reduced to do that from necessity, which would have been a very proper effect of choice ; that is, to swell out the midst of the out-line on each side in the same manner.

In this he will find proportion, and he will now begin to perceive, what we shall presently shew him more evidently by the help of ornament, that by means of these additions to the elliptical figure, and of the projections inward of the outer line of ornament, this central compartment, which appeared at first too small for the cieling, is very well proportioned.

The out-line of this being finished, we are to consider the designing that of the verge ; and, in this, the same cautions are to be observed : that it may be in character with the whole, and correspondent to the other part.

Book V. This is composed at present of eight strait lines, and as many curvilinear figures, occupying their corners and middle, and projecting inwards.

These are only the out-lines of form, as the former; for the real lines are to be left regular.

Let each of the strait lines be formed with a twist at either end, in form of a scroll. Thus will there be something of the freedom of the design, and of the *French* manner, preserved; and when these are laid in, the places of the curves being marked, and their extent determined by the general rude out-line, they will be easily finished.

They must be made in scrolls as the other, and those at the corners more boldly than the others between them.

The cieling thus far designed, let our student stop his hand, and cast an eye upon it. He will perceive no great or gaping vacancies, but still there will be some which will be better filled up in a cieling intended for so much shew and elegance.

The principal of these will be about the corners, and near the curve figures which project inwards.

These must be filled, in some degree, by throwing a kind of light scrolls from their out-line every way into the inner spaces, and by giving to their tops an addition of some very genteel light ornament of foliage and flowers.

These will then come near the exterior ornaments of the elliptical compartment in the centre; and, in the whole cieling, there will be no more vacant space than just to bear the additional decorations, of which we are to speak separately in the succeeding chapter.

C H A P. XXX.

Of the farther ornaments.

THE out-line of the ornaments being thus laid down, we may speak intelligibly of that addition. The places are designed by the spaces left among and between those lines, and the architect is to consider in what manner best to fill them. These spaces may be considered under three heads; the centre of the elliptical compartment; the verge of its out-line; and the curvilinear figures at the corners and middle of the sides.

The first can receive only a single figure; the rest will admit many.

In regard of this first, or the internal space of the central compartment, very good architects have left it altogether vacant. We have shewn this in the practice of *Inigo Jones*, and it may be observed also in many other elegant works. This however is not to be made an universal rule: it is a large space in a very conspicuous part of a ceiling, and it may in this, as well as many other cases, conveniently and properly receive an ornament. Chap. 30.

Let this observation, however, limit the extent of the figure, whatsoever it be, that is placed in this compartment.

Let the student who sees the greatest masters have often left this space entirely vacant, by no means crowd it with ornament: let the whole it receives be a single figure, and let that not be too large.

A flower is the most proper, and this may either be taken from something in nature, or formed altogether from fancy: the latter is the most usual practice, but the former would be highly preferable.

This ornament must not be too large, for a second reason, in the present case, which is, that it must not have too great a projection.

Every thing in this way is intended to represent at least the image of something in nature; and a rose of a foot broad and half an inch thick would be monstrous. Therefore as depth cannot be allowed, let the extent be reduced in proportion. This will give a perfect sense of the proper measures of this part.

C H A P. XXXI.

Of the more peculiar and appropriated ornaments.

THE central compartment thus compleated, there remain the spaces within the curves for the reception of figures; and we have allowed also a space round the verge of this compartment: these figures will make the most elegant and most striking part of the decoration; and in their nature they cannot be large.

It appears from a view of the spaces, that of whatsoever kind they must be numerous and small: and this determined, the only question remains what they should be.

Festoons of flowers to surround the central compartment will be naturally the first thought of the architect, for nothing can be so proper in form for the filling spaces of length and little breadth. This would not be liable to exceptions; but there is a method by which not only objections may be avoided, but certain praise insured.

Book V. The best grace any thing can have is that of propriety. We have observed this room is devoted to the purposes of music; and, as we allow fancy to take its full scope, and here shew all its wildness, it will be perfectly in character to use, in the place of leaves and flowers, the representations of the several instruments and implements of music.

A good hand will not wish a better opportunity of displaying his talents than in such figures, and there will be at once, novelty, variety, and elegance.

The spaces within the curves will receive several of these in very handsome clusters, and the art of the designer will shew itself in representing them naturally, and in disposing them so as to make their various forms set off one another.

The wind instruments have their peculiar shapes, and many of them graceful. The *French* horn is naturally an agreeable object; and the flute and hautboy have nothing unelegant. To these may be added the whole variety of instruments in common use, as we have given them in the figure, and as they are represented in one of the most elegant edifices of the present time: nor is this the whole scope of fancy; the reed of *Pan*, the testudo of the *Roman* poets, the *Grecian* lyre, and the sacred harp, may all be brought into the composition; instruments whose use we have lost, but whose forms are represented on coins, and in the antient sculptures.

To these may be added the representation of books of music, whose leaves, well folded by an able artist, and marked with lines and notes, will fill many a space happily, and give a pleasing diversity to the whole.

This we recommend to the student whose fancy shall be employed in such a work; and this we have illustrated with a figure, in which the proportions as well as forms may be read familiarly.

C H A P. XXXII.

Of a large cieling with mixt compartments.

WE have occasionally spoke of mixt compartments in a cieling, and the student understands that we mean, by this term, the mixture of curv'd and angular figures in the same design.

Variety is a certain source of pleasure; and that results from nothing more freely or evidently, in this part of the architect's business, than from such a mixture in such place.

Let him, when he thus understands the use and beauty there may be in this composition, limit his fancy by the recollection that there are very few forms or divisions which will bear it: by the place we have given it in this work, he may be assured we do not regard it as a peculiar beauty; and let him consider it, in the same manner, as a practice that may be useful, but not as one that is to supersede the use of others.

We have mentioned an instance, in a preceeding chapter, illustrated by a figure of *Inigo Jones*, in which, though the student might have desired a mixture of curved and angular figures, they could not have been so disposed without great imperfection. What we shewed in that instance, will also be the case in many others: the student will find it by laying down the designs on paper in ever so light a manner; and when he perceives this, it is our invariable advice, as in that instance, that he do not think of forcing in the use of the figures which are so far from agreeing with the others, or of devising quaint ornaments to fill irregular spaces; but at once reject those forms which will not correspond with the rest, and begin upon a plan of less composition, in which he will find at once more ease and greater beauty.

C H A P. XXXIII.

Of the proper cieling for mixed figures.

HAVING acquainted our young architect that every cieling is not proper for the decoration of which we are to treat in these chapters, it may be proper to consider what particular kind is most suited to such a purpose.

Not a small cieling; because there can, in such a one, be but a few compartments; and, in that case, a vast deal of variety is at once needless and improper: it never fails to carry a look of stiffness and irregularity, but neither is the case where the plan is larger.

Book V. We have given designs in the first chapters on this head, in which there are, in the smaller kind, some round and some square pannels; but they are few and large, and this is the only way in which such a division can be pleasing. What we propose under the meaning of mixed figures at large in this place, could by no means be introduced on such occasions: all would be confusion; the eye would not know where, or upon what, to rest; but would be perplexed and lost among the great variety thrown together in so small a compass.

The first occasion then of calling in the use of these figures is, that that the ceiling be large; and there is one farther reason for it, which is, that but a moderate degree of decoration is to be allowed to the several parts.

This then is the opportunity on which such a design as we here treat of is required; when, in a large ceiling, the proprietor will have ornament, and will not go to any great expence. In this case, the variety of figures is to please the eye, instead of those enriched finishings we have added in other ceilings, and there is at once, in the extent of the work, room to display all the difference of forms, and the eye has space, between one and another, to see them all distinctly.

In such a ceiling, curve and angular figures may be properly mixed with great variety: By these the student is not to suppose himself limited to squares or other such plain forms. He may occasionally introduce multangular figures; and, by the various shapes of these, and the disposition as well as mixture of the others, he will find a way of giving more variety than at first would occur to the imagination.

We have said, as one principal advantage in this variety of figures, that the eye will be satisfied without the use of sculpture, or those decorations added to the several preceeding ceilings; but the student is not, for that reason, to suppose these kinds will not admit of that ornament. On the contrary, none receive it better; and, as there is so large a field, there is more room for a full indulgence of the genius in adopting them from the antients, copying them from nature, or devising them from the imagination.

We shall give a design to illustrate these rules, and shew its advantage in both conditions.

C H A P. XXXIV.

Of the compartition of this cieling.

WE suppose the architect to have, on this occasion, a considerable extent of cieling, which he is to decorate by compartments; and, to that purpose, is to introduce variety in the figures and forms of them.

Let him begin by the common division we have before directed of two lines the length-way, and two the cross-way; and he will so give himself a great part of the final distribution, and the general rules and measures for the rest.

With respect to the two lines that are carried lengthways, there is no particular rule to be fixed for the place of them; for the genius of the architect is not under a necessity of being thus tied down to inches. It is enough to say in general, that their purpose is, by the assistance of the two cross lines, to divide the whole into compartments, which are to be long and narrow squares at the sides, and perfect squares, or nearly so, in the centre.

This gives a rule in general, that they are to be at some small distance from the sides of the cieling; and thus the particular place is left to fancy: nothing is better than to make the central compartments, thus marked by the long and cross lines, exact squares; and, if that be the extent, the place of these two lines to be first drawn may be given to an exactness.

The square of each panel, to the centre of its mouldings, must be just a third of the length of the cieling; and this, being marked in breadth along the whole, gives the place of the two lines that are first to be drawn.

These, laid in, the two cross-lines, are the next consideration, and their place we have given already: for the distance of these first lines from one another, is the measure of each of the cross lines from the verge of the cieling at either end.

Thus, four lines, whose places are in this distribution determined, at once give the general compartition of the cieling; and, in case of a less regular division, something near this, which the choice of fancy is to determine.

This division made, let the student, on each side of his four lines, leave a small equal space; and, beyond that, mark in the mouldings of the pannels on either side; this done, the four first lines may be taken out, and then the cieling shews itself in a very plain form, divided into nine compartments, in a regular but formal and by no means yet agreeable manner.

This

Book V. This is what we mean to avoid by the introduction of mixed figures. In the present sketch all the compartments are alike, except in breadth; and, from that sameness, there results a poor and precise look that can please no eye.

This, which is so unpleasing in itself, is however the foundation of a very agreeable distribution; and we shall shew how that may be made with very little trouble.

The student will remember that when round compartments have been designed in the middle of a ceiling, we have often directed him to mark in the first division square. In the present case something like this is intended; the principal pannels are to receive inner compartments marked with equal strength, but of a different figure: as to the others they will be suffered to remain: their small breadth not absolutely requiring any farther division; and the intent of the work not admitting too many ornaments.

This idea formed of the whole, let the student think no farther of the six side pannels, for nothing is to be added there; but let him go to work upon the three great compartments which make as it were the body of the work.

These are at present great vacancies, squares whose extent is too large for the mouldings that separate them, and that give an air of insufferable nakedness to the whole.

He will immediately think of curve figures for the decoration of them, but here he will find himself strangely limited: in these designs a circle is the only curve adapted to a square, and an ellipsis, in the same manner, to a long square. These are attached inseparably to those forms; and, by this, the ellipsis or oval being banished the present ceiling, only the circle remains.

We have shewn how happily a circular compartment fills the principal place in a ceiling, and that will be the first object which offers for the centre here; but there are in this distribution three pannels of equal extent, of which the central is only one: these are connected to one another without any intermediate space, and it would be as poor a thought to fill them with three circles, as to leave them entirely vacant.

Therefore the designer must find some other figure for this purpose, and we shall take this opportunity of recommending to him a kind which we have not yet introduced into the doctrine of ceilings; this is the multangular.

By this term, we would have the student in architecture understand any geometrical figure beyond the square; that is, any which has more than four sides and four angles.

It is not only the number of sides that is in these figures, which gives the difference between them and the square; the eye at once comprehends with that article their form and situation; and finds the obliquity of the angles, and the various proportion of the sides to the whole, a source of very pleasing variety.

Here then is a new field opened to our young designer : we reserved it to this place Chap. 34.
 that he might first be familiar with all the common forms, and we have invented this
 cieling to shew it in its true and proper use.

He has thus the assistance of two figures, where he thought he had the narrow limitation of being tied down to one ; and there are two ways in which he may use them.

He will understand at once that the two extreme parts of this cieling must agree in their decorations, and the central one must be of the other or peculiar kind : and that it is in his choice to use one circular and two multangular, or one multangular and two circular forms.

Either will be agreeable to reason, and to all the rules of the science ; either will have the effect of breaking the sameness, and filling the vacancies in the panels ; and either will be very pleasing to the eye. He has therefore his choice, but there is one consideration which ought to turn the scale.

In a cieling of this kind, there is nothing he should wish so much as variety ; not only a variety in its several parts, but an unlikeness to the generality of others. A circular compartment in the centre of a cieling is the most common of all figures ; we have told him that he has, in this case, the choice of a circular or multangular one ; and therefore the preference is by all means to be given to the multangular.

This will give at once a tolerable fullness to that principal part of the cieling ; and will give to that, and consequently to the whole, an air altogether different from the generality of such division.

The choice of this figure for the central part of the cieling, throws into the two other large compartments a circular ornament ; and these will agree very happily with one another, and there will result a pleasing variety from the whole. The sharp angles of the squares will be softened in the multangular figure ; and then, lost wholly in the circles : it will seem a regular gradation, and there will be a singular beauty in the composition.

Of the choice of the figures, and their disposition.

WE might leave the designer to himself with these instructions, and he could not fall into any great errors; but there yet remains a more particular examination of the several forms, by which he may add greatly to the beauty of the whole.

Among the multangular figures which will at this time offer to his view, which is he to chuse for the middle compartment of this cieling?

Few of them would be amiss, but there is one very much preferable to them all.

This is the octangular; there is no other that will stand so gracefully in a square; there is none that so well proportions its parts sides and angles, to those of the square, and there is none so happy for conveying to the eye at once that gradation between the curved and angulated figures.

This, we have observed, will have a very pleasing effect; and, in the present instance, as this multangular figure is to be inscribed within a square, and to stand near two circles, there can be no case in which the correspondency of a form could be so well shewn, and consequently none in which the octangular figure could be so peculiarly appropriated to the work.

This then being the choice, there remains only to consider the best method of disposing such a figure within a square; and the manner in which the two circular compartments may be so designed as best to become their pannels.

In these two articles, a very different method is to be followed; the octangular figure agreeing with the square, can be no way so well disposed, as by being carried home in its several parts, and blended in, and with the other; and this being determined with respect to that figure, the best method will be to make the circles smaller, by a considerable degree, than the measure of the square, and to place each far within it: this will give at once a variety in the parts, and a pleasing air to the whole.

When we speak of blending, as it were, the out-line of the octangular figure with that of the square in which it stands inscribed, the student will remember in what manner the out-lines of the smaller and larger circular compartments are united in one of the cielings of *Inigo Jones*; the same method is to be practised here. In that instance there ran a festoon round the larger and the smaller compartments, between their mouldings; and these several figures were made so to intersect by their mouldings, that half the festoon of the larger and half that of the smaller circle united, and made one entire.

In the same manner we would have the parts of the square and multangular figures joined here, we have ordered, in the original distribution of parts in this ceiling, Chap. 35. a plain space to be left between the mouldings of one and of the other, as a more distinct, determinate, and obvious mark of their separation. This bar, which, for the present, we suppose left plain, must be also preserved round the octangular figure; for its parts and mouldings must correspond with those of the other compartments, and this will serve as the mark by which to determine the extent of that figure.

Thus the octangular compartment is to be of such a size within the square, as to blend and unite with its out-line; the several angles are to be buried in the mouldings of the original square, so deep, that half the plain bar being let into the moulding of the square meets half the plain bar in that moulding; and, from the union of these, as from the uniting the festoons in the other figure, there results a combination of the two figures so strict and natural, that they form rather one entire figure than two parts.

The central compartment thus determined there remain the two at its ends. These we propose to decorate with circles marked within them; and we have said they are to be smaller than the squares by some considerable proportion.

The exact degree of this may be very well left to the designs of fancy; but as, in any way, by the rule here proposed, they will be thrown so far within the squares, that their several out-lines will be quite detached, it will be a good article of grace and variety to unite them by means of four intermediate bars.

One of these should proceed from the centre of each side of the square, and join the out-line of the circle in that part. They must be formed exactly as the divisions of the other compartments, consisting of a bar between mouldings; and they will thus, altho' very short, have an agreeable effect.

C H A P. XXXVI.

Of the addition of ornaments to this cieling.

HITHERTO we have treated of this cieling as altogether plain; but, in the beginning, we mentioned its being capable of receiving ornaments. These may be of various kinds, and in different degrees, according to the expence intended for the whole; but, in whatever proportion they are allowed, they will add the same kind of grace we see proceed from their use on all other occasions.

We have hitherto considered this as only a division by lines; and we are now to think of the first ornament. This is to be applied to the part that most shews the vacancy; and this, in the whole cieling, is most seen in the bars between the several mouldings.

Let this be covered with a light and easy ornament of sculpture, carried uniformly through the whole; and as the circles in the two great pannels are peculiar, let them have an ornament in the space between their mouldings correspondent to the other, but not the same.

Let this be a wreath, or festoon, of leaves; nothing better becomes a circular compartment; and, at the same time that it fills the space, which is also filled between the other pannels, it will have its proper variety.

If there be an intent of carrying the ornament a little farther, let roses be placed at the corners of the several pannels, and at the places of the corners of the multangular figure, where they are buried in the other; and, in those short bars which unite the circles to the squares in which they stand, let there be a face: no ornament will become them so prettily, and such a one can be no where better placed.

If any thing more be desired, it must be the filling up the spaces within the pannels; and, for this, the directions we have given on the preceeding occasions answer perfectly well, and need not be repeated here.

Of decorating a cieling with a single compartment.

WE draw toward a conclusion in the article of cielings; but we shall endeavour to give such instances of what is best under the several kinds, that the student in this agreeable science may not be at a loss for any species of decoration, or any proportion of expence.

In the present instance, we shall consider the decoration of a large cieling, in a manner altogether unlike the several forms we have before proposed; and in such a way that it may be either finished plain, at a moderate price, and still have a look of elegance; or admit, at the pleasure of the proprietor, any degree of decoration.

Most of the designs we have already given have been capable of more ornament than we have figured, or of being executed with less; but there is no one of them in which the fancy of the architect is on this head left so perfectly at liberty as what we here propose: for the design here given, if executed plain, will appear as if intended to exhibit regularity of figure in place of ornament; and, if enriched, the pannels will seem made for the figures; and the eye, which only sees it ornamented, will not conceive it could be handsome plain.

This single instance will throw into the student's mind many others of a like kind; and this is a principal intent of our writing. We would not only lead him to work properly, but to think properly; and, upon these several designs, we doubt not his devising many others, which may exceed his originals.

When he lays down the proportion of a cieling, intended, as this, to be handsome, either plain or decorated, the first thing that occurs to him will naturally be this plan of ornament without compartition.

Where so much is intended to be left to the fancy nothing should be done to circumscribe or limit its flights. It is in an open cieling of this kind alone that they are wholly unrestrained, for where there often comes a compartition, there follows a necessity of a particular degree of ornament, according to the nature of that compartition, and as the several pannels are larger or smaller, deeper or more flight.

Here nothing stands as a bound or limitation, and the single compartment which we propose is to be executed without any settled or necessary measure, and diversified altogether at the fancy of the designer.

Of striking the compartment.

WE have, in speaking of a fanciful cieling for a music room, treated of the method of reducing, where no division is intended, by a figure of the shape of the whole, formed of lines drawn at a certain distance within the out-line of the cieling. What we there explained in an irregular line, will be here illustrated in a plain one, and the design, in this first instance, will be perfectly familiar and easy.

As we shall propose to circumscribe our great compartment with a bar surrounded by double mouldings, it will be proper, for many reasons, to begin the construction of the figure with such a bar round the whole, and just within the edges of the cieling. This will begin a reduction of the extent, which, in a cieling intended for this kind of ornament, is a very great article.

Therefore let the designer proceed thus.

Let him first mark the out-line of the cieling upon a large scale, for nothing is so idle as the common practice of working on paper in too small a size.

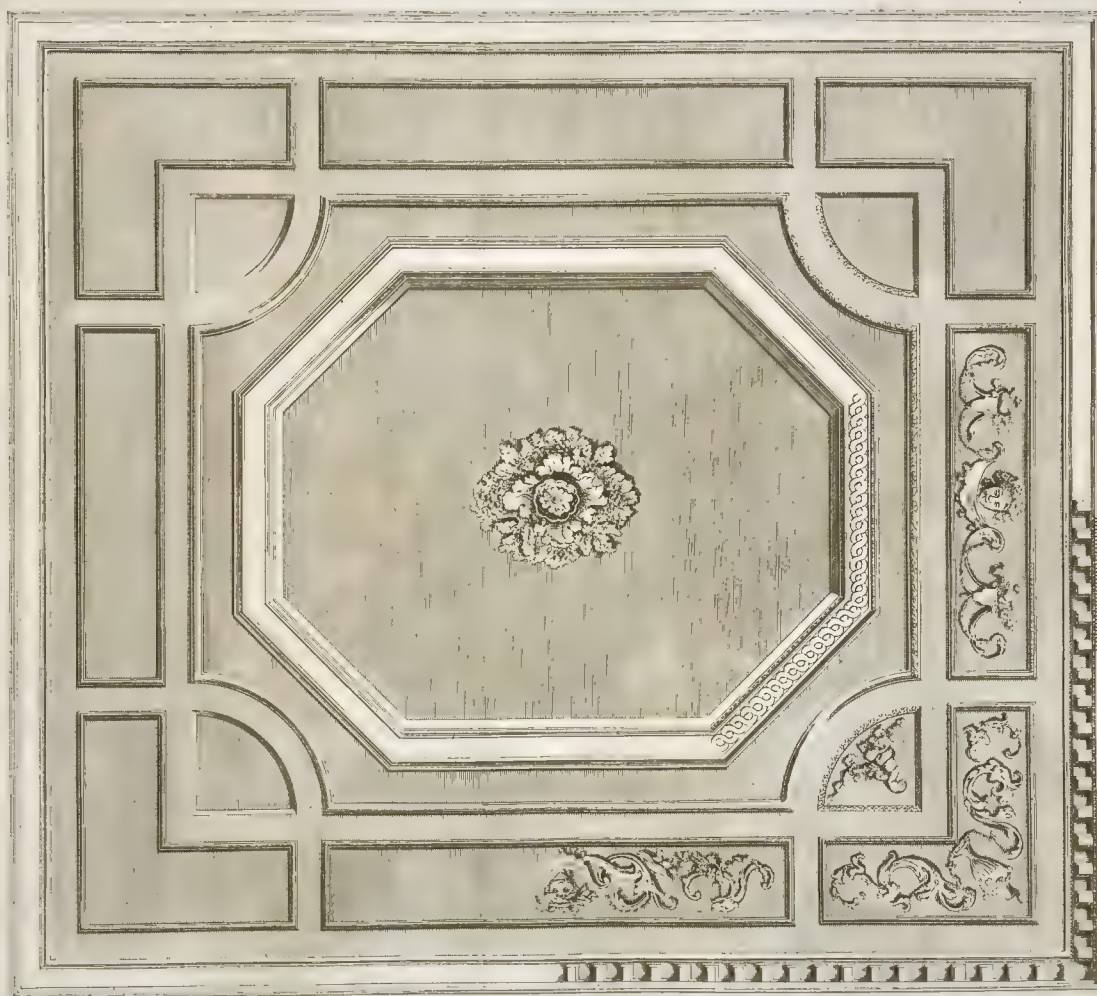
The general out-line thus given, let him mark in his cornice; and, after this, draw a parallel line at a small distance, such as he intends the breadth of the bar along each end and side.

We have said this bar is to be terminated on each side by a moulding; but, in this case, there will need that ornament only on one. The lower moulding of the cornice serves on that side for the same purpose, and it only needs to be terminated on the other.

Let this bar and its moulding be only laid in with light lines that may be rub'd out at pleasure; for though it is at first made entire, that is not the purpose for completing the work.

The cieling thus reduced in extent, let the great compartment be designed by four straight lines, parallel, as the first, with the sides and ends of the cieling.

We shall not limit the fancy of the student by fixing any certain measure for this compartment: the line should be drawn at a moderate distance, within that which makes the bar round the edge of the whole; and, though we do not limit him to the dull employment of an exact copyist, we may refer him to the annexed plate, where he will see this out-line of the compartment placed at a distance, that may be called moderate.





Let this line be laid in as the first, with a light hand; for, as in that case, though Chap. 38. marked entire, it must not continue so.

In order to be useful to the student, we consider things, in this and the like instances, not as they appear to the eye when finished, but as they are to rise from the hand in a regular way of drawing them.

This first out-line of the verge of the compartment being struck, let the mouldings be added: these reduce it a little, and will give some satisfaction to the judicious eye, that in the first view thought it naturally too large for the cieling.

We are about to reduce it farther. The mouldings being laid in, let the designer measure, from their inner verge, the breadth of the bar; and, at the verge of that measure draw the strait lines of another moulding.

All these must be done in the same manner with so light a hand that they may be taken out where needful; and thus the compartment will be found proportioned to the cieling.

Here let the designer stop and take a view of his work. We shall speak freely what he will judge if he think with propriety. He will see the whole stiff and formal, and the central part vacant. It will be a large cieling reduced to a smaller: nothing more, and there will appear a stiffness in the construction.

We do not propose to leave it thus, therefore the reflection falls of itself to the ground, but the student will thus see from what beginnings handsome forms arise.

Book V.

C H A P. XXXIX.

Of filling the central space.

OF the two faults which appear in this first design of the cieling, formality of parts, and vacancy in the centre, the latter is by much the greater; and we shall first consider in what manner to remedy it.

The architect who has considered, with us, the various methods of filling the central compartments in cielings where there is more division, will not be at a loss for means. He will see that a smaller compartment thrown into this vacancy will answer the purpose; and he will be at once upon the thought of a curve figure. Not a circle, because the compartment itself is not a square: an ellipsis would be the most natural to answer this oblong square; but against this there lies objection.

An elliptical figure in an oblong compartment, where there are many, is not at all improper; but, in a single form as this, where both that and the compartment enclosing it must be large, the eye will see the transition too violent from a right angled form to a curve, and will be displeased with it.

The multangular figure we proposed in a late instance, is the proper one to be used here; for the angles are in that softened; and the correspondence and agreement are much more natural between such a figure and a square, than ever can be between a square and curve.

For the same reason that we there preferred an octogon to any figure of fewer or more sides, we prefer it also here: it answers better than any other to the compartment in which it is to be introduced: but let the designer understand that though we prefer a figure of the same number of angles, it will here be required to be executed in a different form.

On this appropriation of parts and ornaments to the whole, depends the great excellence of the design; and it is the article in which most genius is disclosed by the designer.

As the compartment in which we placed the octogon in the former cieling was square, that suited best the form by being regular in all its sides; but here it appears otherwise: the compartment is a long square, and the figure placed within it must be of the same form.

This is easily contrived when the student sees the necessity of it; for it is done by a little lengthening those two sides which stand parallel with the sides of the first compartment, and of the cieling; the rest of the figure will retain its proper form, and the whole will be as handsome as in the other manner.

The place and bigness of this figure come next into consideration: in the former Chap. 39. instance, wherein we used such a form, it was thrown into the square; and the angles buried in its sides; but what was there done is by no means a rule for us in this place. In that cieling the octagon had its position in one compartment of many; in this it is to decorate the single form of the cieling. For this reason, it must, by no means, be carried to the verge of the long square, but disposed at due distance within it.

As to the exact distance there is no rule to fix it; this is one of the things wherein fancy is left to her choice, but he will not err greatly who gives it nearly the proportion that is allowed in our figure. Something more or something less may be allowed without exception either way; and this at the discretion of the designer. He must consider what space it is he has to decorate, and it is best to make the octagon rather too large than too small, because the inner space will be easily diminished again by an agreeable ornament.

The out-line of this octangular figure being marked in, let the designer give the mouldings on each side, and leave the bar as in the other instances.

This will be found a much greater addition than all that was done before; the cieling, which till now was perfectly vacant, will be properly and agreeably filled in the central part; in a manner altogether correspondent to the first compartment: and he will do well to rest his hand again, and take a review of the whole. He will perceive that although the cieling thus enriched has nothing of that nakedness which disgusted the eye in the first instance, still there are vacancies that may be very happily filled up.

In the condition wherein we have now named it, the whole may be wrought in a room of moderate expence; but we shall shew in what manner it may be very easily improved farther.

C H A P. XL.

Of a division of the exterior space.

BY the exterior space in this cieling, we mean that vacant part which is between the outside of the first compartment, and the mouldings of the bar surrounding the whole cieling. In this, if left vacant, there is nothing amiss; but it is so easily divided into compartments, and the effect is so agreeable, that 'tis pity it should be omitted.

At present it is a continued narrow space about the whole, but a few strokes of the pencil in the figure, and a very little addition from the hand of the workman in the reality, will give it a consummate grace.

Book V There is always a merit in those ornaments which are executed by a few lines; and here the compartments we propose are already made into a slight division.

We shall direct the student, in this case, to measure the extent of a handsome long pannel in each side, and one that shall be proportionably shorter in each end space. Let him only mark with the point of his compasses the two ends of each compartment, and there draw a strait line from the moulding of the bar round the ceiling, to the outer moulding of the compartment.

When he has struck these lines, let him make correspondent mouldings in the place, and his compartments are formed without any farther trouble. The mouldings of the bars give their sides, and having made the ends he has no farther business.

Thus are formed four handsome pannels, one in each end and side of the ceiling; and the same lines have formed four right angled figures, circumscribed with the same mouldings, occupying the four corners.

C H A P. XLI.

Of filling the space within the compartment.

THIS designed, the young architect, resting again, will feel a pleasing surprize from what he has done, and be almost astonished that so few lines have made so much and so great difference.

Upon the present review of the work, he will perceive only two vacancies, which he will wish were supplied; the one is within the centre of the octagon, where the naked space is still larger than it ought to be; and the other consists of four parts, the four corners within the compartment itself.

The octogonal figure which comes near the inner line of the compartment at the sides and ends, is very remote from it at the corners between them. This is the natural result of such a figure placed properly in a square, and it is easily supplied. It is all that can be supposed wanting after the decorating the centre of the octagon, of which we shall speak distinctly, because it comes more within the reach of ornaments, than under the head of distribution.

We have observed that it is the quality of a good architect to produce beauties from defects, and it will be shewn in this instance. A very little trouble or expence will fill these corners, and there will result from it an air of finishing, and a variety in the form not thought of.

In the late addition of lines for dividing the exterior space into pannels, we directed Chap. 41.
 strait lines at due distance from the bar of the cieling to the bar of the compartment ;
 and, between these, the breadth of that bar being allowed, there resulted a proper distribution of that space.

These lines are to be the measure for the ornament now allotted to the four vacant corners within the compartment.

Let a segment of a circle be struck from the point of the inner moulding of the compartment, corresponding with this line, and continued to the point corresponding with the line nearest it, in the other side or end.

This will form a small curve, and above it is to be struck another, by extending the point of the compasses the measure of the breadth of the bar. Mouldings are to be given in the place of each of these lines, and the whole will be regular : there will be a plain space in these answerable to the bar in the strait lines and octogon, and the corners will be filled with a curve, whose out-line perfectly well agrees with the side of the octogon toward which it rises.

We observed that the lines which made the compartment and the bar round the cieling, should be marked in so lightly as to be capable of rubbing out without difficulty. They are now to be taken off at every place where the division of the exterior space into compartments was made, and at every place where the correspondent corners terminate.

This at once throws the several figures into one another ; and blending the whole configuration of the cieling produces a general form in the place of many particular ones, and that of a very agreeable kind.

Thus far the whole regards the disposition and shape of parts ; now the consideration of ornaments naturally comes in place. These are not intended to be great or numerous in the present instance, but of those which are proper there is yet a great variety.

Of ornaments for such a cieling.

THE first place of an ornament in this cieling is the centre: This may very well be allowed if nothing more were intended, and alone it will give a proper and a great addition.

The natural decoration in such a place, where it stands remote from and unconnected with any other, is a flower.

In the structure of this fancy is too much indulged; for the best designers come very short of nature. Out of the thousand vegetable beauties she affords, there is room for an everlasting variety without disproportion, or wanton ornament,

We repeat the advice we have before given in this instance; that, instead of studying wild ornament, he read the book of nature. The flowers of our own country, with the addition of those raised by the curious in their gardens, will give him choice of a thousand varieties; or, if he would place them in review before him with less trouble, let him turn over the elegant figures in the *BRITISH HERBAL*, and the *BODY of GARDENING*. From these stores he will stock his mind with a fund of real knowledge; and, besides the use of them plainly, as represented from nature, he will then have the right guidance in his flights of fancy.

One of these flowers, or one formed on the same principle, being placed in the centre of the octagon in this cieling, let him surround it with a light festoon, and by this means at once enlarge and proportion it in form to the place it fills. The octagon being oblong, this flower with its ornaments should also be oblong; and that is easily contrived in the festoon, though it would be unnatural, and therefore absurd in the body of the flower.

With regard to farther ornaments, there are two places for their reception; the pannels of the exterior space, and the space at each corner. The pannels will very happily receive festoons, from their long and narrow form; and these may be decorated with masks, scrolls, vases, or other fancied figures. In the corners there will very properly stand so many cornucopias.

The mouldings may also, at the pleasure of the proprietor, be enriched with light sculpture, and the bars may be a seat also of a great deal of decoration in the same kind.

C H A P. XLIII.

To form a fanciful and very rich cieling.

HAVING led the student, by various steps, from the slightest ornaments bestowed on a cieling to the several noble as well as fanciful kinds, we shall close this part of our work with one of the richest under the latter characters.

Let us suppose him engaged with some person of fortune and taste in building, and decorating a house of the most magnificent kind. One room must have the highest finishing, because one will be intended for superior elegance: this will be large from the nature of the edifice, and on this every decoration is to be bestowed, in the most profuse manner.

The proprietor is to direct the nature of the operation, though the architect is to form the figures: we have expressed, under the preceeding distinction, the two characters in which it may be executed, the noble or the fanciful: the former great and grave, the latter elegant and airy.

We should always prefer the former, and advise the architect never to fail enlarging on its superior excellence; but still the choice is to be left to the owner.

If he be guided by his own true taste, or influenced by the arguments of the architect, to allow one of the cielings for this room of the nobler kind, it is a subject on which we need here add no farther instruction: the great cieling of *Inigo Jones*, which we have given before, contains example, and we have annexed to it rules for working under such a scheme in various proportions of expence.

We shall therefore refer thither the student who is to form a noble cieling for a great and fine room; but, as we propose to leave him deficient in no article or manner of practice in his profession, we shall here at large consider the other kind of richness.

We suppose the proprietor dislikes the former kind; he thinks it too heavy; or he has corrupted his taste in *France* so far as to dislike the *Grecian* science. He desires to have a cieling as rich as that proposed to him, but more airy; and he will have some of the *French* crooked figures introduced into it.

In this case let the architect weigh every thing with care, and very attentively consider the whole, before he reduces any thing to paper.

The extent of such a cieling forbids the thought of a single figure, as we proposed in the music room, and introduces a necessity of compartments. The number and figure of these are therefore the first article that will come under his consideration.

Of the compartments.

AS the purpose of this work is to be light, as well as rich; airy, and elegant, he will find the compartments must not be too large. This results from the plainest reason. The larger the pannels the deeper must be their mouldings, and deep mouldings constitute the first article of heaviness, the very contradiction to the purpose of this work.

The cieling is large; therefore it would have been natural, but for this objection, to have given the compartments a great extent.

The first thought that will rise is to multiply their number to make amends for the needful reduction in size; but if this be fixed upon at random, there will be confusion. The eye must not be perplexed by a variety of divisions in the same surface, otherwise than by some being thrown to the sides; this still leaves the centre, where the observation is naturally detained, clear and free.

Three compartments should occupy the central part of a cieling; this we have shewn in various preceeding instances: and there should be no more in that whereof we treat at present.

We have already observed these must not be large; therefore the first care is to reduce the extent of the cieling.

Thus much being understood, the student may take up his pencil.

Let him mark the out-line upon a moderate scale; and, at some small distance within that, draw on each side and at each end a strait line.

This will mark a space correspondent to those bars we shall place between the succeeding pannels; and will serve as a reception of ornaments.

This begins the reduction of the cieling, but his next line is to finish it. This must be struck parallel to the first, but at some considerable distance within it; allowing so much space that the whole may afterwards be divided into handsome compartments.

We do not lay down an absolute measure for this, because there is no reason for limiting the genius or fancy of the architect; but a moderate proportion will be found in the figure we have annexed to illustrate the rules laid down for his practice.

These lines which form the reduction in extent of the cieling, must be laid in light, Chap. 45. as we have directed on other occasions, that they may be rubbed out where the future division shall require; for this space is to be divided into several oblong compartments, and the bars of that division must be carried throughout, corresponding with the division of the principal compartments, and running to the verge of the cieling.

This reduction being marked in, the student is to consider in what manner he must decorate the internal space, which is the essential part of the cieling.

C H A P. XLV.

Of the principal figures.

WE have advised that the principal compartments in this cieling should be only three. The student now has before him the compass in which they are to stand, and he is to determine their forms.

The extent of the whole surface is lessened in a very great measure by the lines already drawn; but even this reduced extent is not to be filled with those figures it receives.

We have named a bar of division intended between the pannels of the sides and ends, and the first line the student drew set off a space correspondent to it on the extrem edge: let the designer, by a very faint line, mark such a one, at equal distance every way, within the line last drawn, which is to be the mark of the verge for the mouldings of the side pannels.

This line is to be obliterated afterwards entirely, as we have observed others must be in part, but for the present it is of great use, because it marks the exact place where the figures of the principal compartments must terminate.

However large the cieling, the student will find, when he has laid in this line, it is brought into such a compass, that moderate compartments may fill it; and he will now regularly come to the designing of them.

He has his choice of curve and angular figures, and it will be natural and right that he take one curve and two angular, or one angular and two curve for the occasion.

Either is in his choice, but there is a rule which should determine him: the angular are in their nature heavier than the curve figures; and therefore, in a cieling, whose great character is to be lightness, there should be the more of the curve figures,

This

Book V.

This fixes him upon an angular form for the central compartment, and two curves for the sides; and he will be the more determined in his choice of this, when he considers that if any part of such a cieling can bear a look of solidity better than the rest, it is this principal or central compartment.

Thus far the choice is determined, but there yet remains a material consideration: we have found it right that one angular compartment should be placed in the middle, and two curves at its ends: but what angular and what curves are to be chosen?

He judges very inconsiderately who supposes the choice, in this respect, is equal: there is a very essential difference in the character of various forms, under these two general denominations, and such as must at once determine the architect, who considers them which he shall take.

Of all angular figures the square is the heaviest; this should determine him against the use of that kind: and, in the same manner, of all curve figures, the circle is most massy. Here then are two of the common figures excluded.

In regard to the choice of an angular figure it is to be determined upon the before-mentioned principle: as the curve is lighter than the angular form, the more the angular is brought to resemble the curve, the lighter it will be. The more angles are given, the more open they become, and so much the more the angular approaches to the curve form.

This, which is demonstration, recommends to the architect a figure of many angles; and we shall tell him, that, for the present purpose, none is better than the octogon.

The same principle which banished a square from the centre holds against circles at the ends; therefore these are to be what the vulgar call ovals, properly ellipses. An oval is oblong and smaller at one end; this is not intended in the present case: the curve is to be oblong, but equally broad at the two ends, therefore an ellipse.

C H A P. XLVI.

Of the construction of these figures.

WE must here caution the student against a very natural error. The correspondence of parts is a great article with the builder; and, though very necessary to be observed in general, yet, in the present instance, a great deal of beauty would be lost by following it. It is needful to know rules perfectly; but he has but half informed himself, who supposes any can be established in this circumstance without exception.

It would be natural to think that the middle figure, or octagon, should be long, because the curves at its ends are so; but in practice it will be found just otherwise. Their being oblong directs the architect to form this of equal diameter both ways, because that gives variety.

In a design where an oblong octagon took its place between two ellipses, or oblong curves, there would be an air of straitness, poorness, and dry formality; on the contrary, the departing from this strict conformity in the present instance, gives at once an air of freedom, beauty, and variety.

With respect to the size of these three compartments, that will be determined by the line we ordered to be marked within the second; the two opposite sides of the octagon must touch it, and the two ends of each ellipsis.

The student will now, weighing all together, find the result of these determinations, and of the first form of the cieling, to be a very agreeable proportion.

Every part of the ornaments of the compartment kind in this cieling, as we have determined already, must be separated from the rest by a bar between moulding and moulding: the breadth of this we have fixed already, for it is marked in round the cieling.

This is, in the same manner, to be drawn between the three great compartments, and its breadth gives their exact dimensions: their ends were determined before by the inner line along the sides, or running lengthway of the cieling; the outer edge of each ellipsis had also its place fixed by the part of the two endmost lines with which it is to come in contact: and, in the same manner, when these two bars of separation are marked in between the pannels, the two sides, as well as two ends of the octagon, are fixed; and the inner as well as outer sweep of the ellipsis in its middle.

Thus, without geometrical calculation, we have given the student the form, proportion, and bigness of these three pannels; and, following his own lines, he cannot err in the drawing them in a plain and regular manner.

Of finishing the compartition.

THE distribution is thus made, and the three principal parts are designed; but there remains yet a great deal to be done in compleating the division. At present there runs along each side and each end, only a long vacant, and ill-looking space: we have said this is to be divided into compartments, and though so much is to be done, there will be prodigious ease in doing it. No new lines are to be devised for this; a continuation of those already marked in for forming the three great panels answers the purpose. This gives the best division of which the several spaces are capable; and this makes an uniformity and correspondence in the whole.

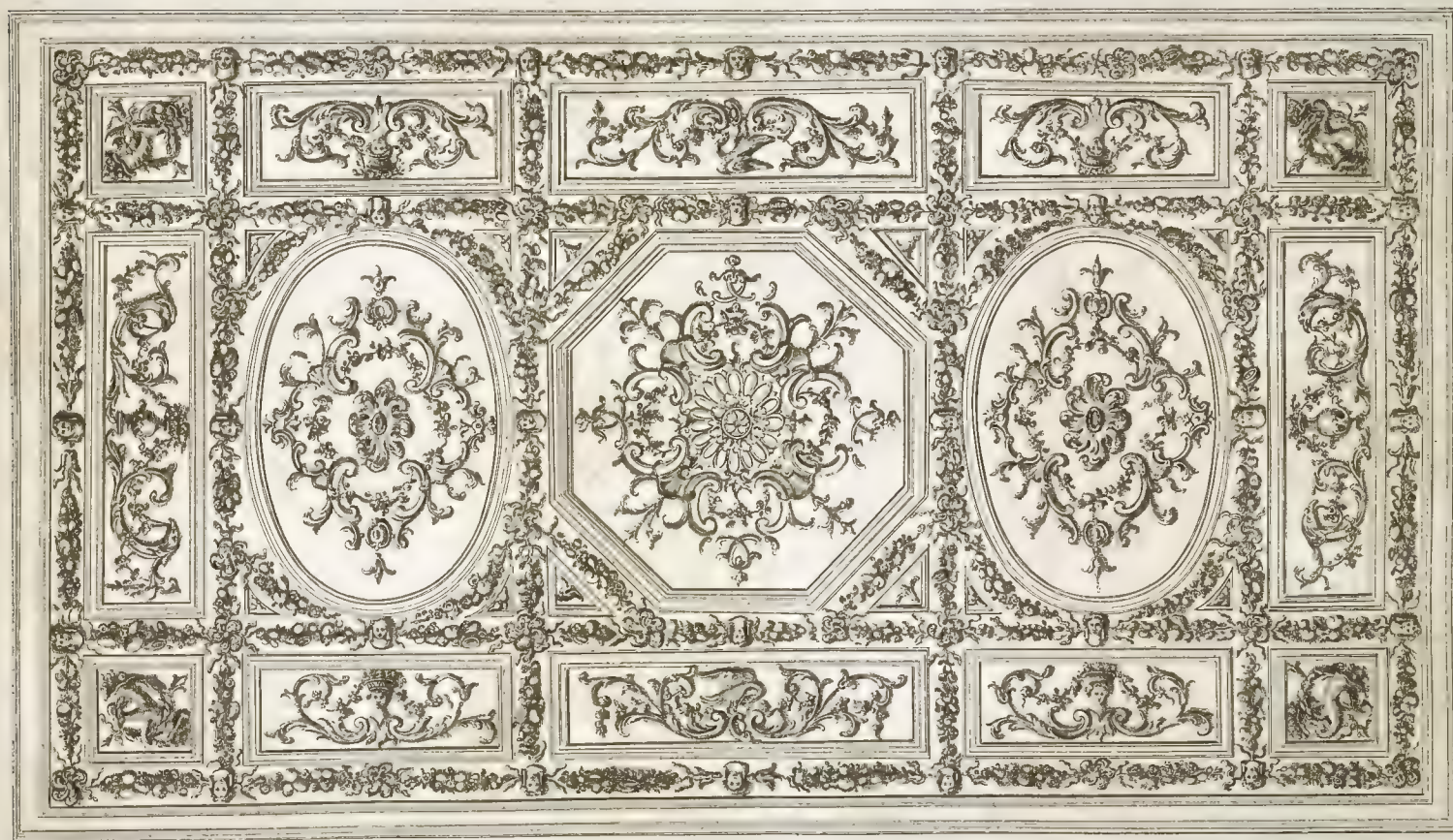
Let the student look over his work, and he will see how little is required to give it this division; he sees, in the first place, a line extending the length and another the breadth each way of the ceiling: this is the second distance from the edge, and marking the breadth of the space intended for the side panels, it runs each way home, or to the verge of the ceiling.

At a little distance within this, he sees another, marking the breadth of the bar, and running the length of the three great panels. Let him continue this home each way as the other, and the side space, intended for the panels, will be thus perfectly separated from the ends.

Next let him, in the same manner, continue home, or to the edge of the ceiling, that transverse line which marks the breadth of the curves and the bar between them, and the space for panels at the end.

This done at the two ends, let him continue in the same manner, to the verge of the ceiling, those two double lines which mark the breadth of the bar, and each side of the central panel, or those between that and the two sides of the ellipsis inward. This will compleat the division of the side space into its proper panels: these will be of a good shape, proportioned well to one another, and to the rest of the ceiling, and every way pleasing to the eye.

We observed that a great deal of the first lines of this side space must be rubbed out; and it is now the time to do it. The lines carried lengthways and transversely of the ceiling, for the separation of the several parts, in many places cross one another: this confuses the eye, and prevents its distinguishing their nature and office. Let the student now open all the bars; that is, let him rub out that part of one line, which, crossing two others, interrupts the continuance of the bar, or space meant to be left open for the proper separation of the parts.





Thus the three long lines on each side will be rubbed off, where they cut these bars of the division; and, in the same manner, the three lines drawn at distances at each end, where they run through the long lines or bars of that division. Chap. 47

This will throw the whole open, and the student will see the cieling in its proper form; perfectly divided, but utterly destitute of ornament: let this be first considered, and the last finishing will be then properly adapted to it.

The three principal compartments will stand clear of one another, and separated from all the rest, in the same manner, by a bar or space, (for it is no more at present,) every where of equal breadth; the long space on each side will be divided into three pannels, perfectly corresponding to the three in the central space, because they are marked in by the same continued line. The middle one will be longest, because it answers to the lowest compartment. The octagon in the centre, and the measure of the other two, will be that of the central part of each ellipsis.

In the same manner, each end will be divided into three pannels of very unequal extent; yet, as they are proportioned to the other parts, not unpleasing. The middle pannel of each end will be equal to the length of the ellipses, and the two end pannels will be small, and nearly square.

This is the form of the several parts, and we have nothing to consider now but their ornaments.

C H A P. XLVIII.

Of the decoration of this cieling.

FANCY may have her full scope in the finishing of this, for it is intended to be enriched in the light and irregular manner.

The first approach toward ornament must be by finishing the several pannels; these are at present only marked in by lines, but they must be circumscribed by mouldings; they must be light; and, as a great deal of ornament is intended in the bars, they may be left plain.

Let the student mark them in by so many concentric and parallel lines, and he will then see exactly what space he has to fill with his decorations.

In the centre of each of the three principal pannels, let him place a flower; and, according to the first design of this cieling, which proposed admitting the *French* ornaments, let these flowers be surrounded by a continuation of those light and fantastical hooked figures, so as to fill moderately the space within each pannel.

The

Book V. The use of these is evident in the present instance, for there is no other ornament that could spread over so much compass, with so little projection.

These compartments filled, the several long square pannels at the sides and ends come into consideration.

Festoons would naturally occur for these, but that ornament must be used for another purpose, therefore let it be omitted here to avoid a repetition.

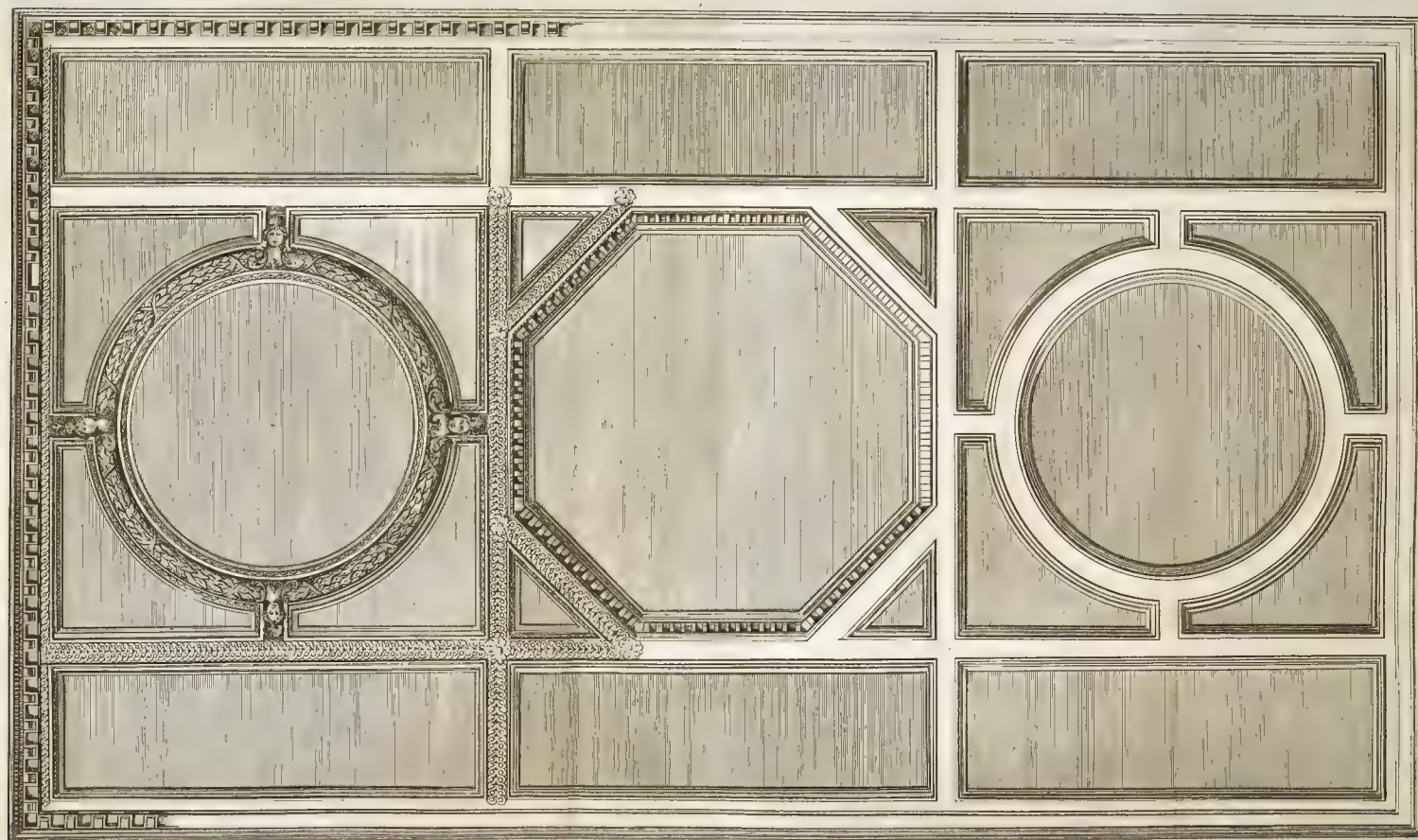
Scrolls varied by the fancy of the architect will be the most proper for the oblong pannels; they may be diversified and extended at the pleasure of the architect, and they will therefore fill any space.

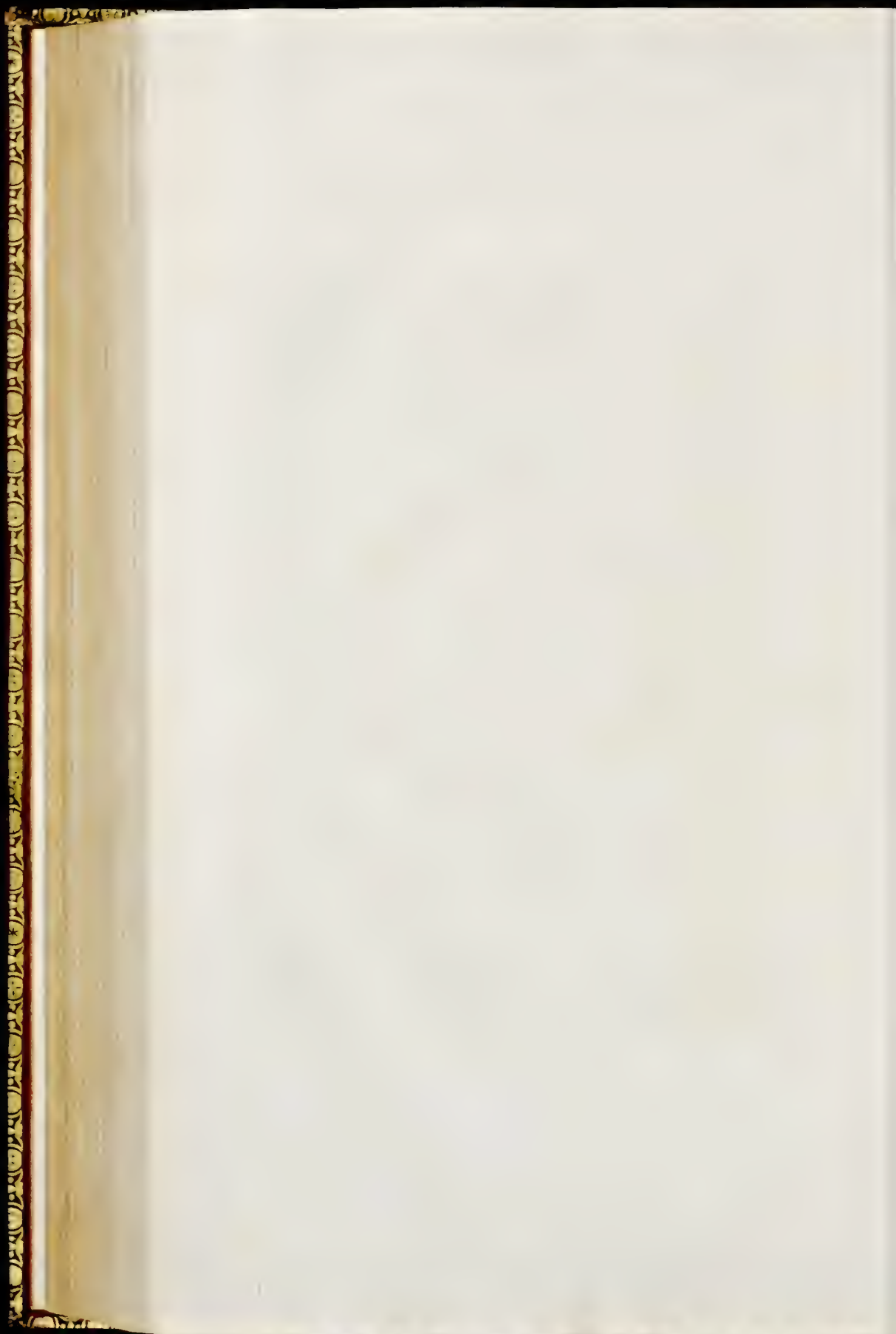
They may be decorated with eagles, griffons, *Pegasus's*, or other fantastical or real forms of animals; and with masks, faces, and baskets of flowers. In this fancy has her full sway, and the variety is endless.

The corner pannels, which are small squares, will receive cornucopias very agreeably, and these may be varied in each so as to give satisfaction.

Nothing now remains vacant but the bar of separation; this runs between all the pannels, and encompasses all at the verge. Along this there should be carried festoons of fruits or flowers, interspersed with masks and ribbands.

The corners at the elliptical and octangular compartments may be just marked in, as we have directed on preceeding occasions, and the space for a bar preserved every way round them. This will receive fruits and flowers as the rest; and the cieling will be so completed in a manner perfectly agreeable to the proprietor's original design, as we have represented in the annexed figure.





B O O K VI.

O F

C H I M N E Y - P I E C E S.

C H A P. I.

Of the general structure of chimney-pieces and their several materials.

WE are in nothing left so much to the dictates of fancy, under the whole science of architecture, as in the construction of chimney-pieces. Those who have left rules and examples for other articles liv'd in hotter countries; and the chimney was not with them as it is with us, a part of such essential importance, that no common room, plain & elegant, could be constructed without it.

With us no article in a well-finished room is so essential. The eye is immediately cast upon it on entering, and the place of sitting down is naturally near it. By this means, it becomes the most eminent thing in the finishing of an apartment; and, as fancy is to stand in the place of rule and example in its construction, nothing is more essential than to direct the young architect how he shall employ this wild guide properly: on what occasions he is to give the reins to imagination; and when it is to be limited by method.

This will be our subject in the succeeding chapters, in which we shall endeavour to lay before him all the variety that can be properly introduced; and every kind of allowable ornament: adding to these what he may transpose from other parts in the antique structures, and upon what plan he may devise innumerable and unexceptionable decorations.

In the present chapter, to advance regularly to the ornaments, we shall first consider the structure of the part, and passing over the slighter, rest upon the more worthy materials.

The square body of a chimney opened on one side from the level of a floor to a due height for the convenience of making a fire, and the advantage of receiving
 N°. 58. 7 B its

Book VI. That nothing may be spoken in the succeeding part of this disquisition which the student will not understand perfectly from the beginning, we have added to this number two figures, one a *simple* chimney-piece, intended for a common-parlour, in a good house; and the other a *continued* chimney-piece suited to a drawing-room, or other great apartment. By the figure 84, the simple chimney, the young architect will see, that we do not under this term exclude ornament; we only limit the extent of the work to the proper circumference of the opening in the chimney, without consideration of what comes above it.

By the second figure 85, he will see we mean a chimney from which an ornament is continued to the top of the room, which is connected with it, and properly a part of it.

C H A P. III.

Of the various ornaments of chimney-pieces.

WHEN we have introduced the student to the first distinction and general division under which he is to regard this part of a room, we shall consider the various ornaments of which each kind is capable. With respect to their appropriation and use, he will find that the simple chimney is best suited to a paper'd or plain room, or to one that has little additional decorations; the continued kind to those which have higher finishings: and he will find that the whole praise of this work will depend upon the suiting this continued ornament to the rest of the finishing.

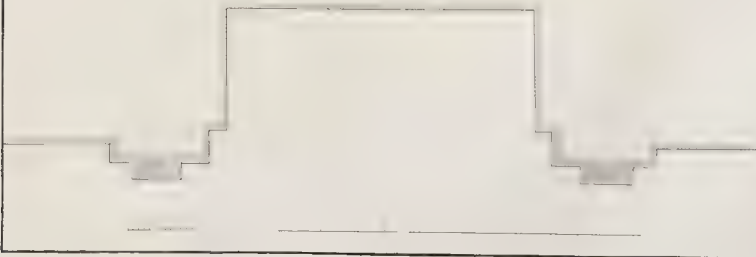
Both the one and the other are susceptible of all the grace of ornament, and in these two figures we have sketched the various kinds by common sculpture.

We shall afterwards treat of the distinct kinds of decoration, which are proper to either in particular, or common to both; and shew the use of columns and similar decorations; in figures of chimney pieces, suited to various degrees of expence.

From these we shall proceed to the introduction of figures; the Caryatick, or *Persian* orders: and having in that manner settled the idea of the student, respecting the variety of kinds, shall give designs of the various species suited to different prices, and the elegance or plainness of different apartments.



a - Parlour (chimney) Piece





C H A P. IV.

Of the appropriation of the materials to chimney-pieces.

UPON the before mentioned distinctions we shall be able to speak intelligibly to the student with respect of the different kinds of marble, and their proper use. When we can be distinctly understood what is the character of the simple and continued chimney-piece, that with mere sculpture, that with columns, and that with figures, we can without tediousness explain, what is the kind of marble suited in general to either purpose.

Having given this distinction of chimney-pieces, that of marble follows; the nature of the materials being a proper appendage to the variety of the works.

We shall consider the several species particularly hereafter; but for the present it will be necessary to establish only one general distinction, this is, into the plain and variegated marbles.

By the plain, the student is to understand those marbles which are throughout of one colour, whatsoever that be; and by the variegated, such as have more than one colour, however disposed.

Of this latter kind there are a great number, and they have their variations in different manners and degrees, but in whatever degree or form they are distributed, our rules to be established in this place suit them alike.

Many of the variegated marbles are very expensive in the first purchase, and some of them have a vast additional charge attending the cutting. Those to whom expence is a recommendation (and there are too many of that class) determine generally by this, and allot the most expensive kinds for the richest chimneys: but let our student guide himself by better rules: let him consider to what purpose each will best serve, which have the most compact substance, and will best answer to the artists chisel, and which from their shattery nature are fittest to be wrought plain.

This is a rational and a great distinction: the architect that goes to work without this consideration, and without a knowledge in the nature of the several kinds, will involve his proprietor in expence to no purpose, and hurt his own reputation.

This is a distinction founded on the nature of the materials; and is therefore to be observed inviolably: but there is also another scarce of less importance, though

much less regarded, which results from their plain or mixed colouring. The ancients were aware of the effects of this upon the eye, and they conducted themselves in general accordingly. There are exceptions: for there were unavoidable necessities in some cases, and there were among them some workmen of less judgment; but in general the rule by which they guided themselves was this, when they intended a great deal of ornament, they employed a plain marble; and where they proposed less workmanship, they allowed the most variegated kinds. The reason of this is evident, and it is wonderful that all ages have not attended to it: the beauty of sculpture depends upon light and shade; and therefore every thing which disturbs the light in this respect, defeats the purpose of the artist. Any thing creates this disturbance that occasions a different reflection of the rays of light; and we know that the rays differ from every colour.

The shades give the eye all the idea it has of this great ornament; and these are diversified when the light is reflected from an object in different colours.

Therefore for all sculpture and ornament, the best material is that which is of one simple colour.

This is an invariable rule; founded upon unalterable principles in the nature of things: and this the young architect is to make the first guide of his conduct.

This will throw him upon a determination very different from that we have named as the common opinion of common judges: instead of bestowing the richest coloured marbles upon those chimney-pieces where he intends the greatest expence of ornament, he will reserve these painted kinds for such as he intends should be wrought with less assistance of the chissel; and he will adopt for these high sculptured pieces always a plain marble of one uninterrupted colour.

C H A P. V.

Of the choice of marbles for particular chimneys.

THIS which we have delivered in the preceding chapter is to be an essential rule for the architect in his choice of marbles; but the degrees of ornament are so many, that he is not to suppose coloured marbles excluded from them all. Let us bring this subject to the particular enquiry allotted in the former divisions.

Usually, simple chimney-pieces have less sculpture than the continued kinds. Therefore, as one general rule, he is to observe that of the two kinds, the variegated marbles are best suited to the simple, and the plain ones to the continued chimney-pieces.

This

This is not a rule without exception, for a great deal of sculpture, may, without any absurdity, be allowed in some cases to a simple chimney; and in the same manner some of the finest designs for the continued kind may be of a species where proportion takes the place of ornament by sculpture. Chap. 5.

In these cases, as the chimneys themselves are wrought in a manner different from the natural and accustomed method, the materials must be suited to that alteration: a plain marble, will, in the eye of reason, be preferable for such a simple chimney, while the continued one will properly receive all the lustre of various colouring.

In the two instances we have given, in the plates 84 and 85, the matter is moderated on either side, and they are such, as may admit the use of either plain or variegated marbles in either; but upon the whole, the inverted rule would be proper; rather than the general doctrine.

Thus if the parlour chimney-piece, (Pl. 84.) be considered as one of the simple kinds, a variegated marble would be, at first thought, allotted for it; and in any of that kind it would make a handsome figure: but if we consider the dolphins, the faces, the ornament of the sides, and the sculpture allowed to the mouldings, we may, very properly make the exchange, and prefer a plain colour.

Let us suppose this chimney wrought in each way, and we shall by that be best enabled to judge.

If it be done in one of the clouded marbles, (the common purple and white for instance) the plain part, which is considerable, will shew the polished surface to advantage, and the vases will make a very graceful figure: but in the dolphins it will begin to appear irregular; in the faces it will be confused, the features will be scarce distinguished by the eye from the mixed perplexity of the colours; and when we come to the little foliage, and the sculpture of the mouldings, all will be confused, imperfect, and irregular to the sight, though it have proceeded from the hand of the artist in the highest perfection.

Let us now take the other side, and suppose the same design wrought in statuary, or plain white marble: here the plain parts will be very graceful, because a plain surface of a well-polished white is very agreeable: the fishes and the faces will be perfectly distinct, and the eye will follow the least strokes of the chisel with perfect regularity, as it traces the several mouldings.

Therefore, upon the whole, when a chimney of the simple kind, has this degree of ornament, it is better to allow it a plain than a variegated marble: and when there is yet more sculpture, the advantage lies all on the side of the plain colour. We have given this as the extremum of ornament, in which a judicious architect should ever allow a clouded or veined marble to be used; and the rule is universal on the other hand, according to the first determination, that in all simple chimneys, where
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Book VI. there is less sculpture, as is usually the case in those kinds, a clouded or figured marble is preferable. The use of these variegations in the marble, in the hand of a good architect is to hide a deficiency of work.

On the same principle, our continued chimney-piece, (Plate 85.) which is much less decorated than the succeeding designs we shall give in that kind, and as little as a chimney of that construction ever should be, instead of a plain marble, which is the kind we have recommended for the construction of these chimneys in general, a coloured one may very well be used.

It is true, the faces will be less distinct than when the marble is plain, and the sculpture of the mouldings will suffer to the eye, whatever justice it hath received from the hand of the workman; but when so much pomp is intended at so moderate an expence, and the labour of art has contributed in so slight a degree to it, the high colouring and beauty of the marble will assist in the design, and serve happily to suit the chimney to the lustre of the other parts of the room.

These are the variations, which the general rule we first laid down admits; and having given them their full and fair scope, we may proceed in the course of nature and reason, and in respect of all the succeeding designs, adapt the materials to the work upon the general plan.





C H A P. VII.

Of a Doric chimney-piece.

UPON the plan already laid down, let us now advance to a chimney in which there is the use of an order. We begin with that which stands lowest in rank among those proper to be used for this purpose, the Doric; and there is none that answers the intent more happily for general occasions. If ever the Tuscan order should be thought of, the common room of a Dutch ordinary would be the only place for it, and then wrought in wood, it might stand an emblem of the taste of the country: but the very next step to this raises us to great elegance and dignity. The Doric is an order very well becoming a chimney, and from the rules we have laid down in a preceding chapter concerning the finishings of rooms in general, it will naturally be most used. No richer order need ever be thought of for a parlour; and there are very few dining or drawing-rooms, in which it would not be proper.

We will propose such a chimney in its plain use without addition or continuation; that the student may not be embarrassed with any additional articles in the consideration; and we will suppose it in a parlour papered in the present fashionable manner, where nothing is added to it, and where from the plainness of the rest, and the great difference in colour it stands very conspicuous; the first object that strikes the eye on entrance, and the only one that can fix the attention.

In this case, as it will be considered strictly, let the architect take care it be liable to no objection; and as there will be some expence in the use of the order, at any rate, let him take care the aspect answer the charge. In the first place, let him consider the outline of the whole, and let him see that the entire work be not too high. The Doric is not a lofty order, and very little is intended to be added here above its cornice: in this instance, therefore, the general design must be that of a grand and solid chimney-piece, whose proportion and regularity, are to be its sources of grace and ornament.

In treating of the Doric order under a former division of this work, we have laid before the student many ways of executing it, supported by various instances in the antique and authorized by reason; but no one of these need be introduced in the present case. The proportions given by Palladio will answer better than any of those authorized variations, and will not only absolve the architect from all possible censure, but ensure praise.

Book VI. The column is no way so happily proportioned for a near view as by the method of Palladio's measures; and there is no use of an order in which it is brought so perfectly before the eye entire as this way.

This understood, let the architect design the outline of his whole chimney-piece, and raising the column upon a plinth, construct its several parts, architrave, freeze, and cornice, with the due proportion to its height and diameter, carrying up above it a plain piece of the pedestal from over the columns, by way of finishing to them; and continued at the same height all the way between. This is the general idea: we shall descend now to the particulars.

C H A P. VIII.

Of the disposition of the columns.

TO execute the chimney-piece here designed in its full elegance, the columns must be two on each side: we are sensible this must be an addition, and a very considerable one to the expence, but the advantage will very well repay it.

The first things that occur to the imagination of the architect in this place are the distance of the columns and their projection: these we shall immediately settle. The distance must be such, that a triglyph come regularly over the axis of each column, and a metope of due measure and proportion be left between.

In this manner of coupling the Doric columns, there is all the grace of which that order is capable, and the full beauty of its freeze is displayed in the most agreeable manner.

As to their projection, let the young architect remember, that columns have never their full beauty, but when they are perfectly free. These therefore should be brought forward in such manner as not only to shew their whole contour; but there should be a free space behind corresponding to that between them: and they will there be seen in their full perfection.

We are not for tying down the architect to lines and inches, nor is it needful; but if he would see a moderate proportion for such a chimney-piece, he will find it in the plan of the figure with which we have illustrated the present number.

In directing the Doric order to be constructed in this distance, upon the rules of Palladio, we order the attick base to be placed under it. This is our reason for raising the column above the level of the slab, for the mouldings of the attick base would otherwise be in danger of injury from accidents.

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The two columns on each side should therefore be placed upon a common or continued plinth, brought forward according to the projection we have allowed in the plan. Chap. 9.

From the base on this plinth let the column be raised in all its plainness and just proportion: let there be no flutings or other ornament on the shaft, but let its diminution be properly observed, and it will in no instance be seen more conspicuously. The capital is to be after the Palladian measure; so in this there is no choice: but the neck of the column, may, at the discretion of the architect, be left plain or decorated with roses.

The expence of this ornament is below consideration; but its effect is more than can easily be conceived. One side of the chimney-piece in the annexed plate 86, is left plain; and the other is decorated with this small ornament, that the eye may at once see the great difference.

C H A P. IX.

Of finishing the order.

BESIDE the working the several proper mouldings with truth, which in this order is the right source of elegance and grace, there remains the consideration of the freeze, in which our student is aware he may, at his pleasure, use more or less ornament.

The Doric, without its triglyphs, wants its most essential character, and seems but an elevated Tuscan. These, therefore, we would enjoin our student never to retrench: but there remain the metopes or square spaces between them, in which he is more at liberty. None would call it an omission if he left them plain; but they are a very agreeable seat of ornament; and something may be added in this respect at a very small expence.

The ancients, who used this order first for temples, chose for their decoration the instruments and objects of sacrifice; but this is by no means the business for a chimney. It will be best to decorate them entirely with the works of fancy; or with alternate flowers and fanciful figures.

In this respect, let the architect observe the proportion of ornament, between the neck of the shaft, which is the only part on which we have allowed it, and the metope, which is the sole part in the entablature, in which any thing can be placed to correspond with it.

If

Book VI.

If the metopes are decorated with figures, never let the neck be plain; but let it certainly have roses, correspondent to those embellishments. The rule is not so absolute on the other side, but that it may admit of licence in favour of the smaller part. The strict doctrine is, that if the metopes be left plain, the neck be also plain. This is founded upon the laws of the science, but in the present instance, we shall observe they are not inviolable; and advise the young designer, if there be any decoration in the rest of the chimney-piece, which is the point next to come under consideration, that he allow roses to the neck, though the metopes be plain.

C H A P. X.

Of the ornaments of the rest of the chimney-piece.

THE student will easily conceive that the coupled columns do not compose the whole chimney-piece, they would appear raw and naked if they came with their edges to the aperture of the fire place. They must have a back, and that must be continued to some breadth within the expanse; and it will receive very properly some decoration.

This is the principal object of enquiry in the present chapter.

This part might be carried plain to the edge, but it would by no means agree with the bases of the columns, or mouldings of the entablature. All here should be of a piece, and the least that can be added is a bead by way of margin. This will be only fit when the order is executed in the plainest manner; and even then it will be much better to allow something more. A raised ornament of mouldings is the least that should be thought of; and at pleasure there may be thrown behind these an edge of sculpture.

The quantity or form of this is altogether the work of fancy; and we have given an instance of what is moderate in the figure in the plate before-named. This ornament being added to the verge of the aperture, the freeze forming a continued line, from one pair of columns to the other will be too tame and uniform for the rest. Its length will indeed be over proportioned in every sense, and it remains to consider, in what manner to break in upon it.

The plainest, best and easiest manner is by inserting a tablet over the centre of the aperture, to intercept or cover so much of the freeze.

This is a kind of addition, very natural and very proper in a chimney-piece; and it will receive any ornament the architect shall find correspondent to the rest of the work.

The plainest and most natural is an urn to fill the centre; and from the handles of this may be dropped on each side a festoon, which drooping toward the middle, may be raised again, so as to reach the upper corner on each side of the tablet. Chap. 12.

This done, the chimney-piece may very properly be filled compleat. But still there is a part, in which, if the architect pleases, he may indulge his fancy with some ornament. This is the plain-piece, carried up above the cornice, to correspond with the finishings of the columns. It is but little that should be done here; and 'tis much easier and more natural therefore to err on the side of excess than of defect.

Scrolls may be added to the projecting parts, at the ends which finish the top, over the columns; and over the tablet in the centre may be raised a small pediment. Thus much may be allowed within the bounds of the most sober rule and method: more may be added, but it will be wrong, for the intent is, that the body of the chimney-piece should attract the eye, not this additional part.

The pediment should be open, because it will then receive a figure; and custom prescribes the adding that part of decorative furniture. The depth of the cornice, and the flat top of the additional part, will serve as shelves for fanciful embellishments; and of whatever kind they are, there should be three principal ones one on the lower part in the pediment: the two others are the extreames of the upper directly over the columns: these may be vases.

This is always right in the eye of reason, because it gives the columns an appearance of use. In architecture, every thing should at least wear the aspect of being intended for utility, for this reconciles the whole to reason. We know the columns in front of an edifice, are usually meant only for ornament, yet they never give so much satisfaction as when they are terminated by an attick pilaster, and that supports a statue. The case is the same here; the vase we propose as the principal figure at each corner will stand in the place of such an image. The projecting part of the top-piece serves as the attick pilaster in the other instance; and there is that sort of delusion we expect in these instances, the columns seem placed there for some useful purpose.

Having thus considered at large the construction of this chimney-piece, we shall enter upon the subject of the most proper materials.

Of the kinds of marble most fit for this chimney.

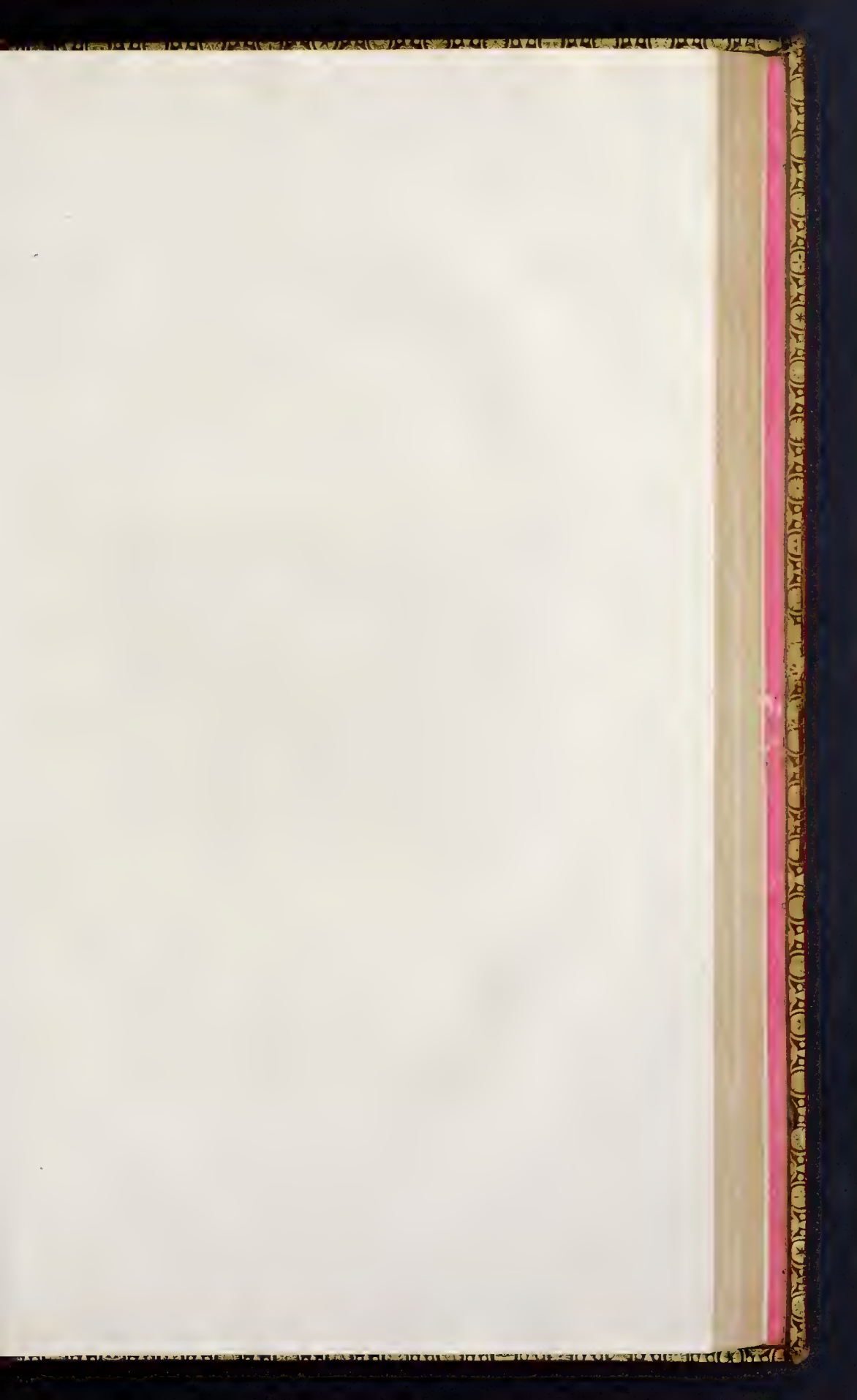
CUSTOM allows the architect great liberty in this respect, and it is often abused; we see chimney-pieces very well designed, and even well executed; where the choice of the materials disgraces the construction, and buries the ornament. Against these errors we are to caution our student; and if he recollects the principles we have in a preceeding chapter, established respecting the use of plain and coloured marbles, he will not be at a loss for the foundation of all we have to add respecting his conduct in the present instance.

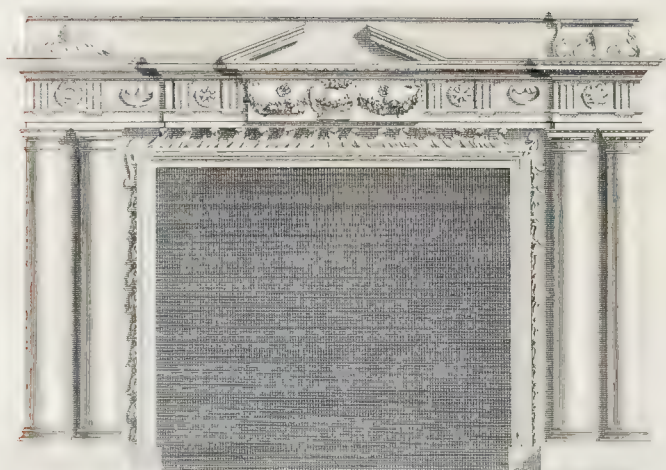
In the first place, he has his choice of three manners in which to execute the work in point of materials. It may be entirely of one kind of marble, or it may take in two kinds, or it may even receive the addition of a third.

The plain manner is to make the whole of one kind of marble; but in the second instance, the body of the chimney-piece being of one kind, the columns are to be of another; and in the third, the columns being of one kind, and the body of the work of another, the tablet, which is a very conspicuous part may be of a third.

This may be carried yet farther, for the tablet being of a distinct kind, the sculptured ornaments may be of one different even from that, and the plain part will serve as a ground and foil to them. The plainest way of all would be to execute this chimney entirely with white marble, and this will be extremely pleasing. But let the architect, who superintends such a work, see that the true, pure, statuary marble be employed: for though the plain white is very proper, nothing could be so improper as the veined white, or common marble. The reason why the plain white would be proper, is, because, it would clearly and beautifully shew all the work in the scrolls, about the festoons in the tablet, and the decoration of the freeze of the order.

This it would do, because being of one entire, uniform colour, it would always receive and reflect the light with truth; but in the common marble, which the vulgar suppose like this, and fit for the same purposes, the veins would appear as so many shadows, and would perplex and confound the whole work.





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The body of the chimney-piece in white, and the columns in black marble, Chap. II.
 would be agreeable to the eye, but monumental; we name this because there are
 rooms of a particular cast which it may suit: but what we shall absolutely recom-
 mend to the student is to adopt both the rules in the construction of this piece, and
 give a coloured marble for those parts which are detached and plain, and to make
 the rest of an uniform colour.

In this there is still great choice, for the columns according to this rule may be of
 any of the coloured marbles, and the body of the chimney-piece of any of the plain
 ones, but where there is even so much choice, there is always a preference in some
 articles. Here the most elegant manner would be to construct the whole body of the
 work of pure white statuary marble, and the columns of the syena, or gold and
 purple.

Marbles of greater or of less expence may be found at every statuary's and ma-
 ny that will answer the same purpose: this will give the general rule, by which,
 to regulate the choice in every kind.

The tablet still remains to be considered, for it is absolutely a detached piece, and
 may be of any one of the other kinds or different from both. This last method is
 never to be used, unless when it is of a very rich material.

Some of the *French* marbles, that are veined in the manner of agates, may be
 used, but they are the poorest kind that can properly be admitted; and as they are
 very irregular, their veins running wildly, and there being chasms or holes in many
 places, if they be admitted, there must be great care in chusing a perfect and
 well-figured piece; and in giving it the most compleat polish of which it is ca-
 pable.

There are some of the old marbles much more fit for the purpose; the true
 verde antique, will be a glorious addition in this place, its elegant green being al-
 together unlike the whole; and upon this the ornament well wrought in the same
 statuary kind will be very elegant.

A tablet of the true porphyry will also suit very happily; its bloody tinge never
 shewing it self so rich, as in the contrast of the pure white of this statuary
 kind.

If these do not please, the choice should fall upon the granite, whose singular
 aspect, thus contrasted with the rest, cannot fail to please every eye; and whose
 everlasting polish adds greatly to its recommendation.

The chimney-piece, in Plate 86, in any of these manners will be a very noble
 ornament in a parlour.

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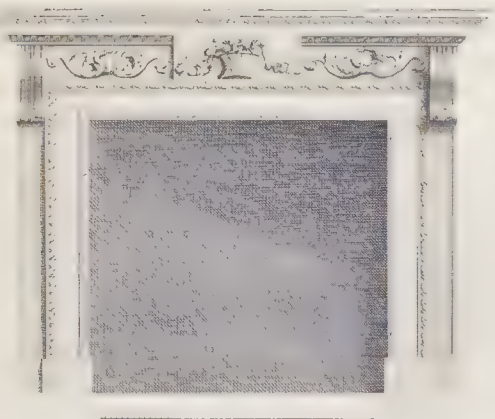
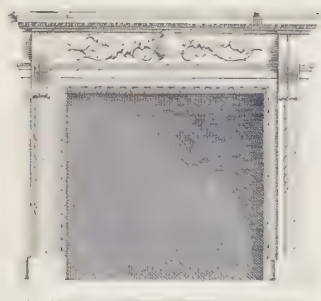
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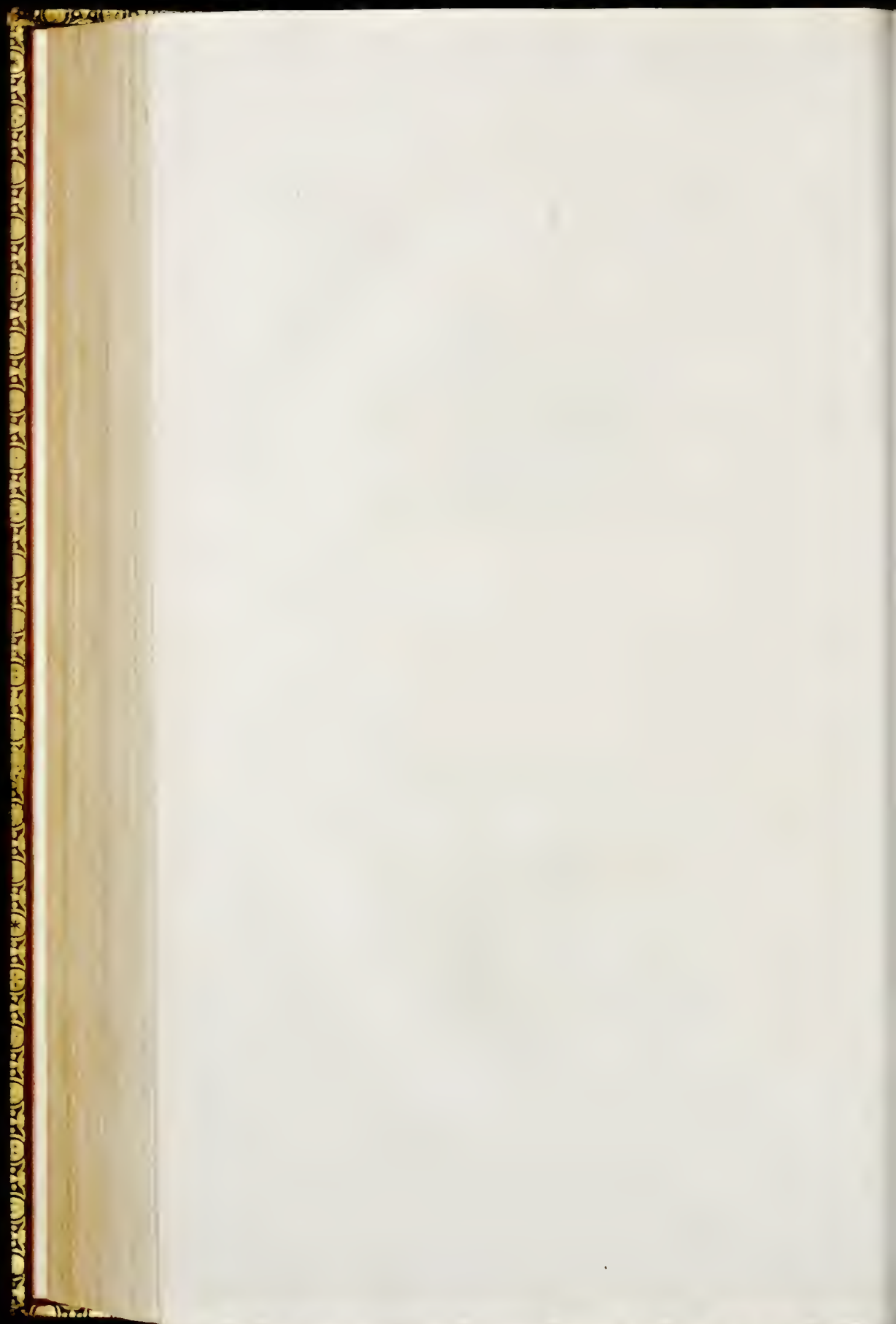
To this we have added, for the use of those who chuse something new and handsome at a smaller expence, two chimney-pieces in Plate 87, fit for smaller rooms, which yet will never be seen without satisfaction.

The workmanship in these is light, and of little expence; and with respect to materials, those of the plainest colours are best for both; because both depend, in a great measure, upon the sculpture, which the lighter it is, the more necessity there is it should be seen distinctly.

When ornaments or parts project very forward, they will often appear distinct to the eye, against all the disadvantage of a mixt colour; but when they are light and low, nothing but uniformity in the reflection can shew them entirely; and that can never be had but where the substance is of one plain colour.

Having thus established the rules for constructing these plainer chimney-pieces, we shall, in our next number enter upon such as receive the addition of figures.





C H A P. XII.

Of a chimney-piece with figures.

WE named the use of figures, that is, the introduction of the Persian and Cariatick orders in the decoration of chimney-pieces; and as nothing that can be used on this occasion, is more delicate, we shall, by a familiar instance, explain the general doctrine relating to their use.

We have in treating of these orders distinctly given an account of their origin and nature; and shall avoid repetition, by referring, for so much of their history, to those chapters. It is enough to say here, that they are representations of persons of different nations, whom, instead of devoting for life to the meanest and most laborious employments, the Greeks consigned to immortality in the figures of them in their temples; supporting the weight of the upper part of the building, or seeming to support it.

Men of rude genius represent them crushed and sinking under the weight, and think it a high degree of merit, if they can figure in their sculpture, starting eyes or bursting sinews. The Greeks detested such barbarity; nor, I hope, are we so justly censured for a love of cruelty that such sights could please us.

It was enough for the polite and humane Greeks, that they could place them for eternity in the condition of abject slavery; they did not desire to make the load oppressive. Their figures were easy, and the incumbent weight was not great. Let us in all things imitate them; but it is in no part of architecture we ought so strictly, or can so easily follow them as in the use of these orders in the decoration of chimney-pieces.

The eye is continually upon these figures when placed in such a situation; and he must have a barbarous fancy who would wish to dispose them in attitudes of horror.

Every thing there should have an air of cheerfulness; at least, nothing should give the idea of constraint or pain.

This general maxim will guide the student in his choice and disposition of these figures; and he will naturally acknowledge the force of two general rules for the choice and disposition of these figures.

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A COMPLETE BODY

1. That the Persian order is fittest for the continued chimney-piece, and the Caryatic for the simple.

2. That very little weight be laid upon either: that the simple chimney-piece of this construction terminate absolutely at its proper mantle-piece, which must be the top of the entablature of an order; and that in the continued kind, the ornaments to the ceiling be light; and the materials also of a light kind: upon this alone depends the idea of ease in the figures; and consequently upon it depends entirely our satisfaction in viewing them.

This makes it natural that the figures should not be distorted; and we shall give one general direction to the sculptor, with respect to their countenances; which is, that the Persian, or man-figure have a look of indignation or contempt; and the Caryatick, or woman of dejection without pain. Let the Persian seem to say he does not feel the load, but the indignity; and the Caryatick that she understands her condition with humility.

C H A P. XIII.

Of a chimney with the Caryatick order.

LET the architect who proposes a chimney of this kind to his proprietor, or who receives the proposal from him, first represent to him the expence. This is a very needful article at first setting out, for if it be omitted, he must expect, either that the owner will be startled at the charge, or that the work will disgrace him.

The figures in such a chimney are near the eye, so that every defect will be seen as well as every beauty; and they are of the nature of those other elegancies in the art which had much better be omitted entirely, than done in a slight manner.

It is usual to crowd other ornaments among them, and about the same chimney; for the common opinion is, that one fine thing must be near another: but this we do not mean. Plainness in a certain degree is preferable, because it is more correspondent to the figures; but the needful expence is, that the chimney-piece be of sufficient extent and bigness, that the materials be good, and that a full price be allowed the sculptor. He must finish his work according to the price, and there is none too great that is within the bounds of reason; for there is no occasion on which his art ought to be displayed so perfectly.

We are to treat here of a chimney of the Caryatic order, and according to our first principle this must be a simple one. The female figures of this order are to stand

stand at seeming ease, and it would be monstrous to load them with ornaments up to the ceiling. Themselves are sufficiently ornamental for the work, and the less the eye is disturbed in contemplating them the better. For all these reasons, a plain or simple chimney, which terminates at the mantle-piece is the proper one for the reception of the Caryatick order. This mantle-piece should be formed by the projection of the entablature, supported by these figures, with no farther addition; and there is to the true architect an absolute rule what this entablature should be. This deserves a strict attention; for whenever there is an absolute rule from antiquity, and no objection lies against it in nature or reason, nor any thing better can be put in the place of what it directs, 'tis wrong not to make it absolute, and accuse all of error who depart from it. Chap. 13.

When we speak of these male and female figures; under the name of Persian and Caryatick orders, we do not consider them as simple statues, but as parts of an order of architecture. They supply the place of the shaft of a column; and they are to support an entablature.

We see fancied mouldings placed upon the heads of these figures in modern works; for there is no error or absurdity so gross, but some of those whom of late times we have been content to call architects have fallen into it: but in the earlier times it was otherwise: the chaste taste of the Greeks admitted none of these irregularities; the termination over a Persian or Caryatick statue was always the regular entablature of one of the orders.

It was this, which determined the order, for the statue served as the shaft to any; and their general distinction, was, that the heavy entablatures should be laid upon the Persian as male figures, and the lighter upon the Caryatick or female. But this was not all, they appropriated one entablature to this figure, and in their correct pieces used that only. It was the Ionic: none serves better than this in the natural form and correspondence to the figure, for a heavier would be absurd, and the two superior orders have entablatures too much enriched for the statue. This is a point we shall not wonder to find the student wholly unacquainted with at present, but we shall explain it at large hereafter.

The Ionic entablature was upon this consideration more suited than any other to the Caryatick figures, and this would have made its use general among that judicious people; but there was a farther thought that made it universal: this was the commemoration of the great event they served to record, in all its particulars.

The Ionians were the people who reduced Caria to the Grecian yoke, they therefore placed the entablature belonging to the order of that name, always upon the heads of Caryatick statues, to tell this story to posterity; the Ionians subdued these people.

This, though hitherto unregarded by architects, we shall not hesitate to lay down as a law of the science; that the Ionic entablature be laid upon the Caryatick figures

figures in all places where they shall be used. Reason shews it is proper, and the authority of Greece supports it. The whole matter in these fanciful pieces is trifling, in comparison of the regular majesty which is seen in the great original orders; but when we use them, let us with regularity copy those who first introduced them into the science; and like them tell the whole story.

C H A P. XIV.

Of the construction of the figures.

IT is already determined that the chimney-piece in which these figures are introduced shall be large; that it shall have no ornament above its mantle-piece; and that the mantle-piece shall be the top of an entablature, and nothing more: It is determined that this entablature shall be Ionic; and we are now to consider the construction of the figures.

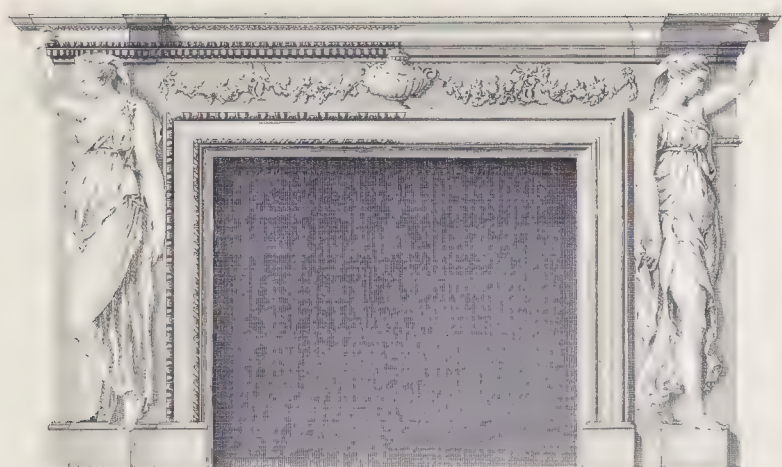
Their length being determined by the design of the general work, of which we shall speak hereafter; the proportions are all regulated by that: the human form is the standard of truth in this respect, only let the sculptor remember, that it is a female figure, and that it will be best if he make it of the most delicate form. No great weight is to be supported; and consequently, no robust limbs are necessary to the purpose.

Thus much determined, two points more occur: the disposition of the limbs and the drapery. These we shall consider separately.

When figures are raised to a height which places them out of the way of accidents, their limbs may be disposed with a freedom which cannot be admitted, where they are in the reach of blows: nothing can be more in the way of these than a figure which makes part of the ornament of a chimney, because the persons who sit near the fire, will lean or rub against it; and the continual business of servants in managing the fuel will carry them also for ever into the way of touching it.

Let the architect consider what parts are most liable to damage. These are, the hands and feet; and particularly the extremities of them, the fingers and toes.

If the hands were displayed at a distance from the body; and especially, if the fingers stood loose and free, a few days could not fail to maim them. We see this in effect, where injudicious designers have formed them in that manner; and experience joins with reason in directing a contrary course.





The first thought would be to throw both arms close to the body: but that would be at once ungraceful and improper. It is natural that a person loaded upon the head, although but lightly, should raise one hand to help to support the weight; and this must be done in the present instance. It will be higher than the part of the image that is in most danger of accidents. The arm, even in a delicate figure, may be strong enough to resist a little injury; and the tender part of the hand may be defended from it.

The proper posture of a caryatick figure at a chimney, is, to have one hand close to the body; and the other raised to assist in the imagined support of the mantle-piece.

The hands must be delicate, to correspond with the general figure, and they will require the best touches of the sculptor's chisel, because every eye will naturally be thrown upon them.

The fingers must be small to answer to this general design; and those of the lower hand will be exposed naturally to blows and injuries; while those of the upper will not be altogether exempt.

The design of the architect is to shew his judgment in securing them gracefully; as the sculptor does in forming them.

The hand that is carried up to support the entablature, may very properly be placed upon the freeze; and in this case, the projection of the cornice will give it a great security.

It would be very proper to give the order its pulvinated or roundish freeze for this purpose, that the hand may be shewn in all its delicacy, grasping it.

In this case, the cornice would not be its only defence; for the fingers might be united to the body of the freeze, and thus would have a strength that they never can when loose.

This hand being so securely disposed, let the student consider what can be done to preserve the other; it is in most danger because it hangs lowest, but there is an easy way to defend it. Nothing can be so natural an employment for this hand, as holding up a part of the robe; and this may be its security. There will naturally be a fold and a rising in the part held up, and these may be wrought tho' with the utmost delicacy, yet with great substance. In the hollow under the rising may be placed the hand, in which the most delicate touches of the chisel may be shewn, while it is thus preserved in the greatest security.

If any suppose the necessary lightness of the robe cannot be preserved with this quantity of substance, necessary to preserve the hand from accidents, we refer

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them to the Flora, well known to all who have viewed with taste the rarities of modern Italy. The quantity of marble in that is three times what is bestowed on most other figures, yet it is the lightest of them all.

C H A P. XV.

Of the drapery.

MODERN sculptors are fond of nudities; but in a chimney-piece they would be abominable: they would shock the delicacy of our sex, and could not be seen by the modesty of the other; they are therefore absolutely excluded from this service, and some drapery is always to be allowed: the question is, how much and in what manner.

Let no statuary here object, that the great excellence of his art is withheld, for that it would consist of muscular figures. We banish anatomy from the parlour of the polite gentleman: that is all. Let him copy his giants for exposure, from those masculine forms the antients have left, or from rough and violent nature; but here let him give his figure cloathing. Nor shall we suffer the complaint unanswered: we shall tell him, it is as difficult to excel in drapery, as in nakedness; and may refer him to those clothed statues of the Greeks and Romans, which it would be glorious to imitate.

That these are capable of equal excellence and may obtain the sculptor equal praise is evident from those examples: with respect to the elegance and propriety all may judge.

We have given in Plate 88, a caryatick chimney-piece, in which the justly distinguished hand of Mr. Grignion has executed very finely the design Mr. Ware has given for the illustration of this subject. In the one half there is a plainness, and in the other ornament, of which we shall speak hereafter; but what regards the present disquisition, is, that on one side there is a caryatick figure perfectly clothed, and on the other, one according to the present licentiousness of sculpture, in great part naked. To these we refer the eye of decency and reason; and leave it to its own determination. None can dispute, but that the more perfectly clothed figure is the more elegant, as well as the more modest. And it is certainly the more natural and proper of the two. The shewing a thigh is contrary to the character of woman, which is modesty, and in the other case, instead of the robe hiding beauty, it gives a great deal, let the drapery be executed well, and the limbs will be seen through it: there will be at once elegance and decency.

C H A P. XVI.

Of the construction of this chimney.

A Great deal is now done towards the general construction of the chimney-piece ; for in considering the several parts, we have observed, that there are to be two female figures supporting an entablature, whose top serves as the flat of a mantle-piece. We have established it as a necessity, that the whole work be of considerable extent ; and there remains only to place the figures, and add an inward ornament to complete the structure.

Let the figures be placed near the entream edge, but not absolutely upon it, for they will be the better shewn when a part of the flatwork projects beyond them ; and they will also be more secure.

Let a kind of plinth be placed under them, for it is by no means proper they should rest immediately upon the hearth ; and this will serve the same useful purpose in preserving the toes from injuries, that the freeze of the entablature answered for the defence of the hands. They may be disposed both firmly upon it, and be made of one piece with it ; or that foot which projects forwardest, and is there in most danger of hurt may be so disposed, and the other which is backward may be made with more freedom, to rest lightly upon it by the toes, or if the sculptor pleases to be absolutely removed from it, it will be safe from its position ; and he may employ all his delicacy in constructing it with security.

As the foot rests upon a plinth, the head is crowned by the entablature. It must be brought forward to answer the projection of the figure : and this will give a relief of light and shade to the whole, and be an ornament to the construction.

As there is a small space of the back beyond the figure on each side ; there must be a larger within, and this will require decoration ; every architect knows this, and the fault is commonly that of employing too much.

The opening of the chimney will be much lower than the mantle-piece ; or, properly speaking, there will be a considerable space between the ornaments of that aperture and the lower member of the entablature : this must be allowed some ornament, but let it not be too much. A vase will be very proper in the middle ; and

Book VI.

a festoon on each side to the edge. The ornaments which surround this aperture must be handsome mouldings. They must not be continued to the level of the hearth, but terminate at bottom on a plinth of the same form with that which supports the statues. These may be ornamented with sculpture; but it is an expence better saved. There is a corepondency of parts which is preferable to decorations of fancy; and this is only to be found in such a construction in plainness.

We have given the student his choice in the two sides of our figure, but every eye must give the preference to the plain mouldings. In this case the figures appear a part of the work, in the other they seem stuck upon it.

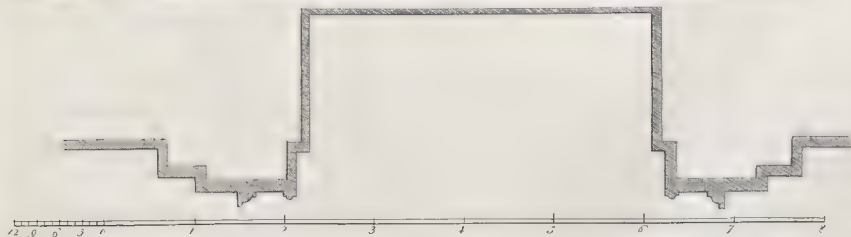
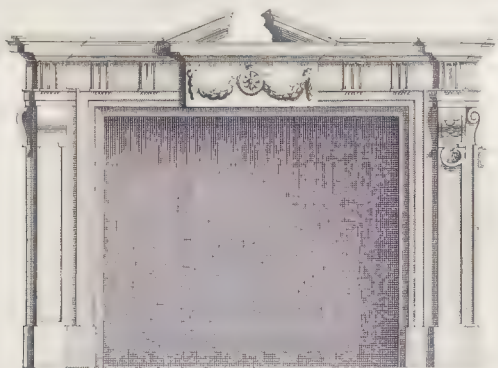
C H A P. XVII.

Of the materials of this chimney.

THE first principle is, that the figures be of pure marble, of one simple colour; and none is so proper as the plain white, which we know by the name of statuary marble. If the whole structure be of the same, none can object to it; but there will be elegance in giving the back and body of the work in marble of another colour.

There will be great beauty in making the body of the chimney of the green and white marble, which is commonly called *Ægyptian*; but the greatest elegance of all would be to work it in porphyry. The common purple marble would not answer the purpose; because the spots and clouding would confuse the eye; and as it is not easy to find a person of such expensive taste as to go to the price of porphyry, we shall propose to make the back of Syenna marble: this is of a colour which very finely shews white, and will elegantly answer the purpose; and finely ornament the figures.

We have added to this number for the use of the practical student, two designs of handsome chimneys at a smaller expence, and suited to the common purposes. These need no explanation.





C H A P. XVIII.

Of a chimney-piece whose sole ornament is sculpture.

WE have considered the use of the Cariatid order in this kind of work; and we have given the construction of a Doric chimney with coupled columns: we shall consider, in a succeeding chapter, the use of the Doric for a chimney in single columns, and give under that head an elegant, though not expensive design: But as there are some less fond of the orders than their excellence deserves, we shall, for the accommodation of such in their own way here, give the design of a handsome piece of that kind which excludes columns, before we return to their distinct use.

It is objected by many, that the orders give a look of massyness and weight wherever they are employed. But we shall set this matter in a fairer light in our goth plate, by representing to the candid eye, upon the same paper, a Doric chimney, which is the heaviest order fit to be used on this occasion; and one in which the orders are excluded.

Having shewn by this comparison, that ornaments of the received kind, for our first figure contains only such, have an air of massyness greater than needs be given where there is the use of an order, we shall proceed to the construction of such a chimney-piece.

Let us on this occasion suppose a room of moderate size, finished in the fashionable way, with light ornaments on the cieling, and with the walls papered; a chimney-piece of some elegance is to be erected in this room; the proprietor dislikes the orders; or the natural bigness of the whole is not sufficient properly to receive them: the architect is to give him a design for its construction; and he begins with a general outline for the sides, and a more particular consideration for the top.

This is to be the seat of ornament, and he adapts to it the decorations of an entablature of one of the superior orders.

In his first design he sees a flatness that displeases; and, to remedy this, some parts must be brought forward.

We have observed how much beauty the projection of the corners of the Ionic entablature over the heads of the Cariatid figures gave to that chimney; and the same elegant diversity of light and shadow will occur from bringing forward the two ends here.

Book VI. If this be not enough, place a pediment upon the centre. We should have objected to this in the preceding instance, because it would have loaded the figures; but there is here no objection.

A tablet should be placed in the freeze, under this pediment; and the projecting part at each corner will admit in its freeze a vase. There requires a face, or some other principal figure in the tablet; and thus is laid down the principle of decoration.

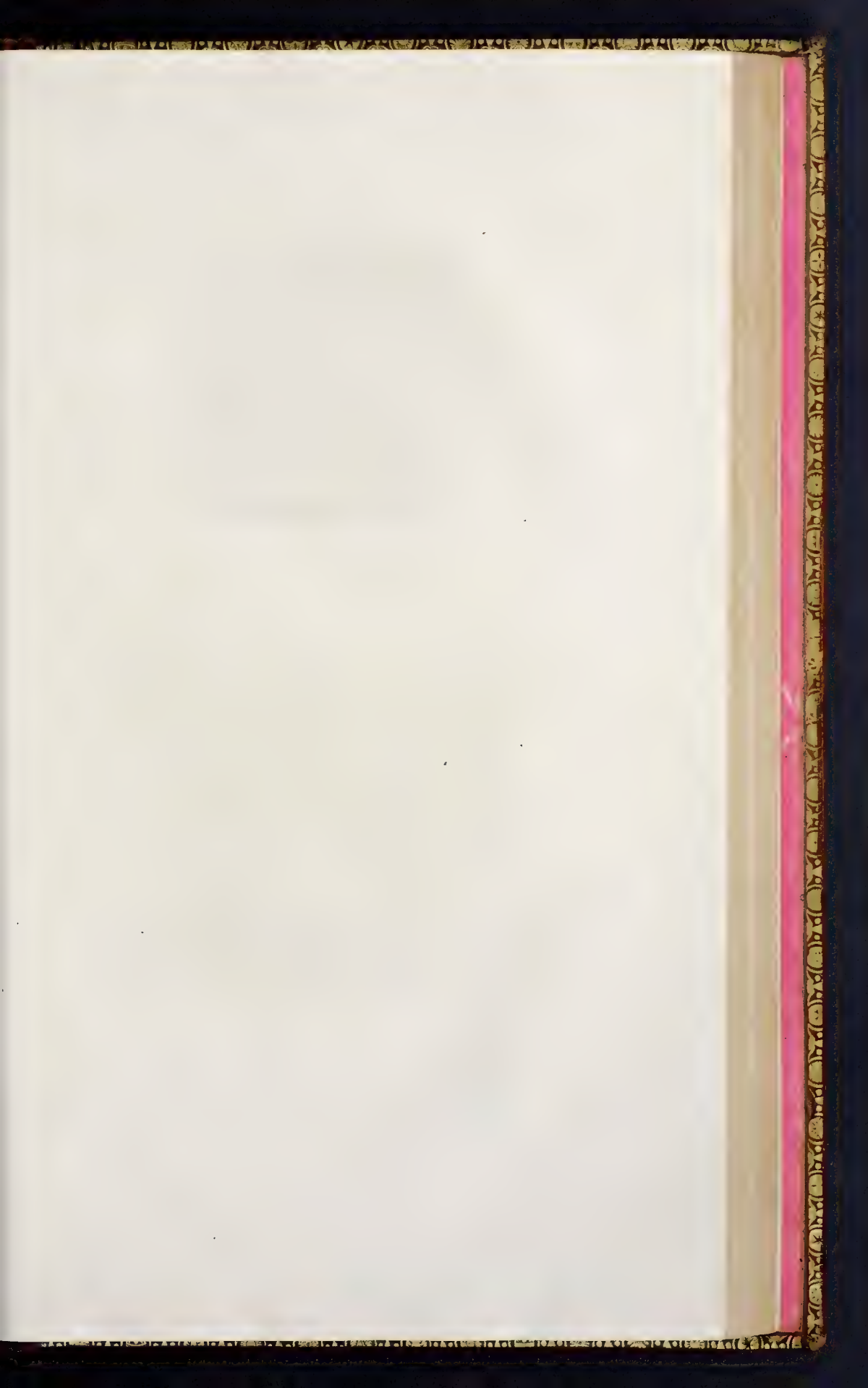
These swelling corners of the entablature require some support; and as columns which would naturally occur for that service are forbidden, the most proper design is a scroll on each side, in the manner of a console.

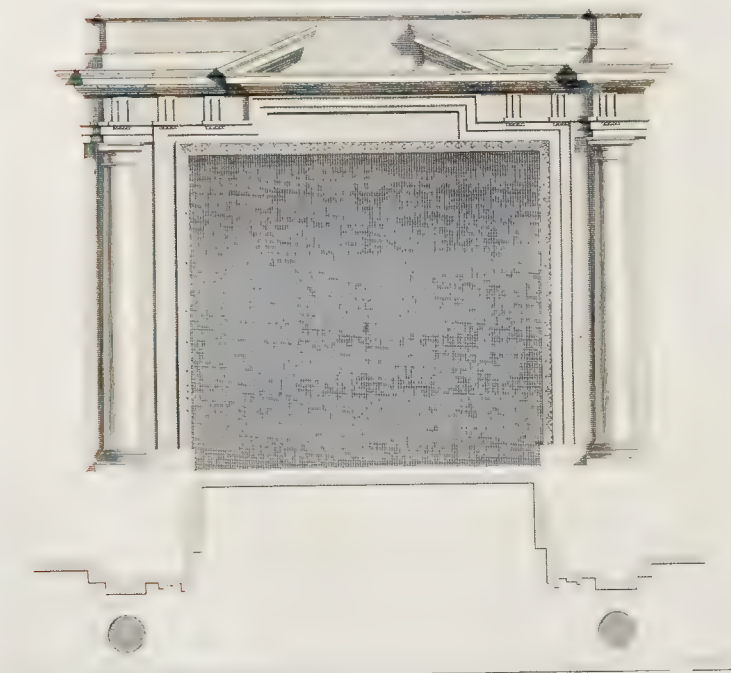
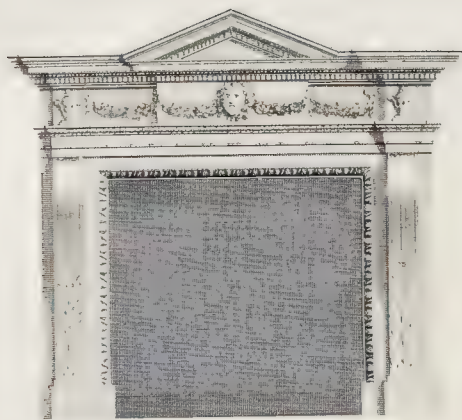
This will admit a kind of fluting or cabling at distances upon its surface; and an acanthus leaf may cover its lower part.

There will be beauty in such a construction; but the judicious eye will only allow these an apology for columns.

The scrolls must not rest upon the hearth, but on a plinth; and the addition of this compleats the material part of the structure. What remains is sculpture; and the nature and design of this is plainly pointed out. The common carving of a quarter-round into what are called eggs and anchors, will serve to decorate the inner edge to the aperture; and the proper sculpture of the mouldings for a cornice of a rich order gives nearly all the rest. A festoon from the face to each edge of the tablet, and another on each space on the two sides of that projecture, finish the whole; and there appears a chimney somewhat less expensive than it would have been if the orders were employed. But though it must be allowed a great deal of beauty in this way, he must have a poor conception of the grace and dignity of those great parts in architecture, who does not see the addition in beauty from the use of them, would have been much greater than the extraordinary expence.

The materials of such a chimney are limited by the quantity of sculpture. To some marble of one colour; for the greater part of the expence would be thrown away upon a veined or clouded marble. Statuary-marble is again preferable to all others on this occasion; but the whole in a perfect black would have a very agreeable, though grave aspect. If a gayer marble be used, the Syenna is best; but in that case the festoons, and other ornaments, will be best in statuary.





C H A P. XIX.

A chimney-piece with single Doric columns.

WE gave, in a preceding chapter, a chimney with coupled columns of the Doric order, and have determined that upon the whole to be the best and noblest way of using that order. But various occasions will require a variety of designs; and that which is evidently the best, is not on every occasion the most proper.

The room in which a chimney-piece is to be placed, may be suited to a lighter, or to a more massy kind; for this part of the finishing should always be correspondent to the rest; and this may give a rule for varying the practice.

We will suppose, for the present instance, a room finished in a moderate degree of elegance, and that the proprietor desires to have a chimney decorated with one of the orders, but not at too great expence. In this case, the finishings of the room, and the intention of the owner in point of expence, limit the number of columns. The first thought refers the architect to the Doric order, as by far the least expensive; and both determine against more than one column on each side.

Upon this plan it will be easy to construct a light and elegant piece; the price of which shall be very moderate for a chimney with an order, and its lightness correspondent to the rest of the work.

Let the student mark first upon his paper the outline of the aperture. Then on each side let him mark the outline of the work; to which, as there is to be only a single column, he needs not allow great breadth; and after this let him draw the outline of the top-member of a Doric cornice, determining its height from the measure of the columns.

We do not intend to terminate the work here: but let this be first done. Let an open pediment be raised from the middle of the cornice; and that this may not stand naked, let another strait line be drawn just above its top, and sloped each way at the breadth of the sides. The cornice of this order will project farther; but that is not to be the measure of this upper work, which is to serve as a continued attick for the finishing.

Of the several parts in this chimney.

THE outlines thus laid in, the student will easily comprehend the disposition and form of the several parts.

Let the columns be first considered, and let them project so far as to stand absolutely free and clear. The distance we have expressed in the plan will be proper. Let them rest upon the hearth by their plinth: on this place an Attic base; and carry up the shaft, with its regular diminution, according to the rules of Palladio. On this place the capital, and let its abacus range with the line which marks the top of the aperture.

Upon this capital let the regular cornice of the order rest. It must project to come over the column; and, receding each way to the back of the chimney, there will be an agreeable mixture of light and shade.

Let the whole aperture of the chimney be terminated by an architrave, with a carved quarter-round for the inner edge, and over the center of the chimney's opening let it rise to support the cornice. The pediment is placed above this, and this rising of the architrave has the appearance of a regular support to it.

The freeze is here interrupted, and a plain tablet left under the raised architrave; but this is no way displeasing. The reader who will cast his eye upon the design of this chimney in plate 90, will see that this interruption of the freeze gives variety, and is very pleasing.

The freeze, where it is continued entire, must have its proper ornament of triglyphs. One will stand over the axis of each column, and two on each side, between the projecture for the column, and the rising of the architrave.

In this chimney, whose expence is to be of a limited kind, we would have the metopes plain, or left without ornament; and consequently the neck of the column must also be plain.

The roses in most cases allowed to this part cost little, and are a great ornament; but they must not be used when the metopes are plain.

In the center above we have placed the open pediment, and have continued a plain course for its back. Over each of the columns let there be raised an Attic pilaster, projecting as the column does; this consisting of its base, die, and cap, will give the ornament of the plain course behind: its base must be continued each way to the pediment, but there interrupted by it; and the cap must be continued along the whole course over the top of the pediment.

C H A P. XXI.

Of the materials for this chimney.

THE sculpture being little in this piece, the architect has his choice of materials. There is so much decoration of a nobler kind, that the plainest will serve; at the same time the sculpture is so little, that the most pompous of the variegated kind may be used.

The body of the work may be of statuary, and the columns of Syenna marble. This will be a very happy mixture, for the gold and purple of that elegant species are never seen to so much advantage as when contrasted with white. The body of the work of the common purple and white, and the columns of the statuary, would also be handsome; or if the columns were of the French onyx marble, and the back white, the colours would be shewn in the most advantageous manner, and the columns would appear like agate. We have a green and spotted marble in Anglesea, that would make very handsome columns for a white ground, or a very handsome ground for white columns; and there is a singularity in this marble which should make it extremely valued: this is the veins of albestus, which are lodged in it.

These are of a glossy white, with a tinge of green; the veins are about a quarter of an inch broad, and the threads run crossways. They are so extremely close arranged, that they look as firm as the body of the marble, and not even fire can hurt them.

This greatly exceeds the common green and white, which is called Ægyptian marble, and ought to be more regarded.

C H A P. XXII.

Of a chimney with termini.

WE have given the use of the columns in plain chimney-pieces, and the appropriation of scrolls to supply their place, where any particular fancy in the proprietor declares against their use. It remains that we treat of a kind between the fanciful or Caryatic orders and these scrolls; and these are of the nature of termini. They consist of the head and breast of a human form, and a scabbard receiving the limbs.

A COMPLETE BODY

We set out with observing, that fancy was to be freely indulged in the construction of chimney-pieces: these are, of all the figures that can be introduced, the most fantastical; and it will be no where so proper to introduce them.

When the student falls upon a design of using them, let him first observe, that one of the simple chimney-pieces, that is, one of those which terminate at the mantle-piece, is fittest for the reception of them; for it would not be easy to continue a correspondent ornament to the top of the room.

Beside, as in such a chimney there must naturally be a great deal of sculpture, the continuing that in the same taste, if a proper form could be devised, would be of enormous expence, and would distract the eye. 'Tis fit the attention should be fixed where there has been so large an expence, and so much labour and genius to demand it; and for this reason, as well as the other, the work should be confined to one place, bestowed about the lower part of the chimney-piece, and fall in the eye on every occasion.

C H A P. XXIII.

Of the construction of this chimney-piece.

THE first consideration of the architect in a design of this nature, must be that of giving it a freedom in all its parts. There will be somewhat massy in the figures themselves, for it is the nature of these kind of designs to swell out at the breast; but he is to contrast this with lightness, and an airy look in all other parts, and to give free scope to his imagination.

On these principles let him sit down to his design, and mark with a faint line the outline of the whole. This will be naturally three sides of a square; but it is to be broken through on several occasions; for so many strait lines would give a stiffness altogether discordant from the design of ease and freedom. This outline first given, which only serves to determine the general extent, let him design his termini. They are to be raised upon a square plinth, and their heads are to support the mantle-piece. This gives their height, and from thence are to be deduced their proportions. As these are the principal part of the chimney-piece, let them be drawn first, and the rest made correspondent to them.

The face, the neck, and a part of the breast, is all that must appear human; and as this part of the body is much more graceful in the female form, let them represent women.

Let the head be decorated with flowers among the hair; the neck be naked, to shew its true proportion; and let a festoon of flowers fall carelessly over the breast.

Pl: 91.



Boys sculp.



to hide the separation in the midst, and represent the fullness, and beautiful round, Chap. 23. without coarseness or indecency.

The sculptors of this time require nothing so much as to be taught decency. The necks of females, from their hands, are generally improper. We may refer them, for better information, to the present dress of the French, who shew all the beauty of the female breast; yet by a rose, or some other artificial flower, in the middle, take off every idea of immodesty.

The human part of the figure thus finished, the scabbard comes into consideration. This receives the breast, and has a spiral line on each side at its top, where the arms seem to have been taken off.

There is no part of the scabbard less beautiful than this; though custom, and the practice of the ancients, has rendered it essential. The festoon we direct to be thrown lightly over the breast, may be continued with ease, so as to hide a part of this.

From this part the scabbard will consist of a front and two sides; and it must be covered with sculpture.

A great deal of work should not be employed on this, because it is not the principal part of the design; but they err who give it too little. The ridges should be plain, but carefully wrought in that plainness; and, for the ornament, it may be only a Mosaic, by light lines crossing one another, or this may be more ornamented; or, finally, the design may be varied.

This Mosaic, when it consists only of lines, is very plain, and in such a chimney as is here proposed, would be unworthy of the rest. The lightest ornament is by adding a kind of star at every intersection of the lines; and the most that should ever be allowed, is by placing a small flower in the center of each lozenge of the Mosaic division.

When these flowers are added, there should be no stars at the intersections of the lines; and when there are no flowers or other ornament within, this should never be omitted.

This is the general decoration of the scabbard to be determined; but there yet remains to be considered that superior article of ornament, the varying the design upon this part.

The least that is to be done in this way, is to place a rose in a small compartment in the middle of the scabbard; and this, when the Mosaic is continued, will give an air of variety. This we have represented in the left-hand figure of the chimney-piece, in Plate 9^r.

The other and more graceful method is, by dropping a leaf from the top down half-way of the scabbard. This should be an acanthus leaf, because its shape corresponds, and no other is so handsome. The Mosaic division will then perfectly well answer for the other half, and may be carried up all the way on each side.

It

Book VI. It will be a farther grace to this scabbard, to let the foot of it rise from the plinth with a swelling within; and this may be very happily decorated also with a leaf.

We have given these various ornaments in the termini of the two sides, in the figure before mentioned.

These figures thus finished, the rest is easy. A mantle-piece is to rest upon their heads, where it must project with a rounded outline; and both here and in the fruit part it may be decorated with sculpture.

The inner line of the chimney-piece may be a rounded and handsome moulding, which at the top may be carried, according to the French manner, into an irregular arch. In the center of this a scroll may supply the place of a key stone; and this spreading each way from that central part, may leave room for a basket of fruit, and terminate each way in a festoon.

This we have represented in the figure in a moderate way; and then the rise of the mantle-piece being decorated with leaves and fanciful ornaments, the whole will be correspondent, and of a piece.

C H A P. XXIV.

Of the materials for this chimney-piece.

THE rule we have laid down of allowing coloured marbles where there is little sculpture, and plain ones where there is more, holds very strongly here. We recommend this chimney-piece to be constructed entirely of pure statuary marble, as that will most distinctly shew the work; and the eye, having no glare of colours to take it off, will be wholly kept upon that.

However, as some think there is a deadness in this strict uniformity, we shall advise the student in what manner to give a decent variation.

The body of the chimney-piece being of white marble, the scabbards of the termini may be of the green Anglesea kind, or of the common green and white Egyptian; and in this case it will be well to make the mouldings round the edge, of the same materials with the scabbard. The flower-basket may also be of the green marble; but the fruit and flowers in it should be white, for all the delicacy of the work will otherwise be lost in the veins and cloudings.

C H A P. XXV.

Of continued chimney-pieces.

THE student is now so far a master of the rules upon which the structure and decorations of chimney-pieces are to be founded, that we may lead him with familiarity to the composition of those of a more complicated kind. These are such as we expressed before under the name of continued chimney-pieces; and they require a more distinct consideration than, by the practice of modern architects, they seem to be aware.

It is no more than truth to determine from their conduct, that they have no other idea of this kind of chimney-piece, than that it means a simple one, with something at the top of it. Some flutter of ornament, and some shape of a frame, they suppose are needful on this occasion; but farther they seem not to have carried their researches. One kind of ornament, or one sort of frame, they apprehend will do as well as another: and when they have made, or otherwise possessed themselves of half a dozen figures for this purpose, they apply them at random; and seem to think of them, as the famous comedian did of his prologue and epilogue, that the epilogue might do for a prologue, or the prologue for an epilogue, and that either of them would serve any other play as well as that for which they were intended. Indeed instances of chimney-pieces of this kind might be produced from some of the latest and most expensive houses. In which the whole might serve as well inverted as upright; and the frame would serve for a chimney-piece, and the chimney-piece for a frame, and both would suit any other room as well as that where they are placed.

We do not produce these blemishes in our best buildings, to ridicule, much less to injure those who invented them; and therefore conceal the names they would disgrace. It is for the service of our student we represent them in their proper colours. They are so frequent in good houses, and they pass so often without censure under the review of reputed judges, that, were it not for such caution, he might be led to think them right; and place them before him as examples for his conduct: at least as excuses for his own errors.

We have told him before, that it is to very few of the structures of this age he is to look up for example; and we shall repeat the decision before made on a like occasion, That an error is not the less so, though justified by a thousand instances. Of this he may be sure, that the very eyes which overlook defects, will never be blind to beauties, and that he will ensure to himself, not only a greater, but an universal praise, by acting up to the rules of truth and propriety.

Book VI. Longinus directs the orator, in order to arrive at excellence, to suppose the famous predecessors in the art are present; and upon all occasions to put himself in their place for the composition. Let the architect, who would arrive at excellence in his not less arduous or less honourable science, tread the same path. When he is about to lay down the design, let him consider well the occasion, and ask himself, What would Palladio have done in such a circumstance? When he has finished, let him demand, What would Vitruvius say were he present to examine this?

It is by this method men who have arrived at excellence in any of the polite arts, have imbibed, as it were, the genius of their great predecessors. He must have indeed a cold imagination, who could design meanly or incorrectly when he supposed himself acting in the spirit of that reverend modern, or appealing to the judgment of that judicious antient.

C H A P. XXVI.

Of propriety in the ornaments.

THE first consideration which would rise in the mind thus warmed with the remembrance of those persons immortalized by the same science, would be propriety. Without this, beauty would be ridiculous; for, from the conduct of those whom, though unnamed, we have been obliged to load with so much unwilling censure, he will first consider by what means the whole will be most naturally suited to the room in which it is to be placed; and next, in what manner the two parts (for they are in themselves distinct, though joined) will be best adapted to one another.

With regard to the first article, we have in general observed already, that a continued chimney-piece can only be proper where there are ornaments of sculpture about the room: for otherwise there will be nothing with which it can correspond: therefore, against all other considerations, let him design at all times a simple chimney-piece for a room that is hung, and a continued one for a room that is finished any other way.

No wainscot is or can be made without pannels; and it will be easy to make the upper part of a continued chimney-piece correspond with them, let them be of whatsoever kind.

This we would recommend to the attention of the builder, even in the plainest and meanest rooms. There will be a regularity in it which will never fail to please, and the expence nothing. In this case no more will be required than to form a regular design of an upper part for the chimney-piece intended to be placed there, and to execute it with the common mouldings of the pannels.

There will be no more expence in disposing them properly than improperly, regularly than irregularly; and yet the effect will be pleasing, and the architect will have credit. Chap. 26.

A design of this plain kind may be taken from some of those we shall give in the succeeding chapters, only omitting the sculpture and expensive ornaments. A few pieces of moulding extraordinary will in these cases add a vast grace to the room, and please every eye.

This is not all we have in view in describing such a plain, continued chimney-piece. We have, in all other articles of the science, begun from the simple original, and thence led the student to the refinements of the art. This is the familiar original of all continued chimney-pieces, and he will from this be naturally led to those which are more elegant.

He now understands, that the purpose of this work is to raise an ornament like that of the other parts of the room from the chimney-piece to the cieling; and in such manner to adapt this to the chimney-piece itself, that it shall seem naturally to rise from it, and to be connected with it; that it shall be a regular and proportioned part of the chimney-work, at the same time that it is also a regular part of the ornament of the room.

This will always be easy to the architect who sets out upon just principles; for having, according to the rules we have laid down in the preceding book, suited the chimney-piece itself to the rest of the room; these additional mouldings, or other ornaments, when they are made to correspond with one of the two, will also agree with both, because they naturally agree with one another.

It would be otherwise with one who had set out without principles. If he had made a simple chimney-piece too rich or too plain for the rest of the room, then the upper work, which continued it to the cieling, would add to the irregularity: for either it must be made to agree with the lower part of the chimney, and would so disagree with the rest of the room; or to correspond with the finishings of the sides, and by that means disagree with the lower part of the chimney.

These are the accumulated irregularities which never fail to arise from an error in principle. Let them teach the young architect circumspection, and an early regular method.

Of enriching a continued chimney.

As the student will now understand, that the upper part of the continued chimney-piece, that is, all which is above the place of the mantle-piece, is a kind of repetition of the work in the sides of the room, he will know very well in what manner to add proper beauties. Let him consider it is the first object that strikes the eye on entrance, and the most conspicuous part of the room; and, for that reason, while he gives it the same air with the rest, let him make it somewhat richer.

We have observed, that in the plainest rooms it is to be only a continuation of the mouldings of the wainscot in a proper form: from this the first advance to elegance is the adding of a few more mouldings; and after that all the rest is easy. When the common mouldings of the wainscot have some sculpture, let these which are continued over the chimney have more, as well as be laid in greater number; and to whatever degree of elegance the rest is carried, let this part exceed it.

The continuation thus managed will have the air and aspect of a peculiar piece, while it is at the same time a regular and perfectly correspondent part of the whole building.

Rooms which are hung are debarred by the rules of the science from the advantage of this ornament; but for all other kinds whatsoever it is very well adapted. Where the walls are plain stucco, this upper part of the chimney-piece must have very little ornament: but even in that case, as the lower part will naturally be very plain, a light representation of its most conspicuous parts in the space above will be far from displeasing.

This is a very rare case; but we would not have the student without his rule of conduct in any.

Let him not suppose this circumstance of a room finished with plain stucco to be a parallel case with that of one hung with paper or damask, and in which we limited him to the use of a simple chimney. Here the space within the pannel over the chimney being plain as the rest of the wall, at the same time it admits the grace of this addition, keeps up a similarity with the rest, without any thing improper in itself; but, in the other case, the great contrast in the colour and figures of the paper or silk would break in upon the intended composure of the whole; and the mouldings, whether in wood or stucco, would appear to be stuck on the paper, not to rise from

from it, as they will certainly appear to do from the stucco-wall. The upper part of the chimney-piece, which in the case of our plain stucco-wall shews itself only what it is, that is, a light ornament continued from the lower work of the chimney, will, where there is paper or silk, have the aspect of a frame; and these will appear as pictures in it. All know how poor this must look; since, in the reality, what could be so mean as the thought of framing a piece of the hanging?

Indeed, if in a hung room it is intended to place a picture over the chimney, the frame of it should be separate, and should not rise from the chimney-piece below: whereas in other instances, where the continued chimney-piece is proper, nothing is so elegant as to make its upper work serve as a frame for some elegant piece of painting.

In this just examination we see, that what might have appeared as an objection to our general rule, strengthens and supports it; and although in a plain stucco-room a continued chimney-piece is proper, yet in one hung it is perfectly wrong.

C H A P. XXVIII.

Of fitting the upper work to the room.

IT appears that in all rooms, except such as are hung, a continued chimney-piece may be allowed. In most it will be found more proper than a simple one; and in the more richly finished apartments altogether necessary.

We are about to consider the manner of accommodating the upper part of such a chimney to the room: but we must here censure some modern works; and, without naming the workmen, caution our student against their errors.

There have been some who have entertained a confused sense of the necessity of this great article, the conforming the chimney-piece (when, from being carried to such a height, it becomes so conspicuous a part of the room) to the other ornaments. But the judicious reader will allow, that we have used a gentle term in calling these only confused notions, when he sees in what manner they have brought them into execution.

In a room where the doors are decorated with an order, this idea of correspondence of parts has carried them to the placing coupled columns upon the chimney-piece in the continued or upper part of the work; resting upon a mantle-piece, which is supported by a scroll. It reminds one of the decoration of those theatres, where a Caryatid is supported by an Ionic column, and that rests upon a bracket.

There is in this the double absurdity of placing the columns without support, and of giving them nothing to carry. They appear monstrous, because they are unfinished:

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finished:

Book VI. finished: they are too bulky, and too prominent for the place; and nothing can be more preposterous than this use of them.

So far may error in attempting what should seem right carry those whose minds have not imbibed the true principles of the science.

A correspondence of parts is indeed the first principle of ornament; but, before a man pretends to use this, he must know what parts should correspond, or the attempt will only serve to betray him into absurdity. The ornaments of doors, and those of the chimney, should certainly correspond; and we have before directed in what manner. But there is a place for every ornament; and, when it is out of that, it becomes a defect, and not a beauty.

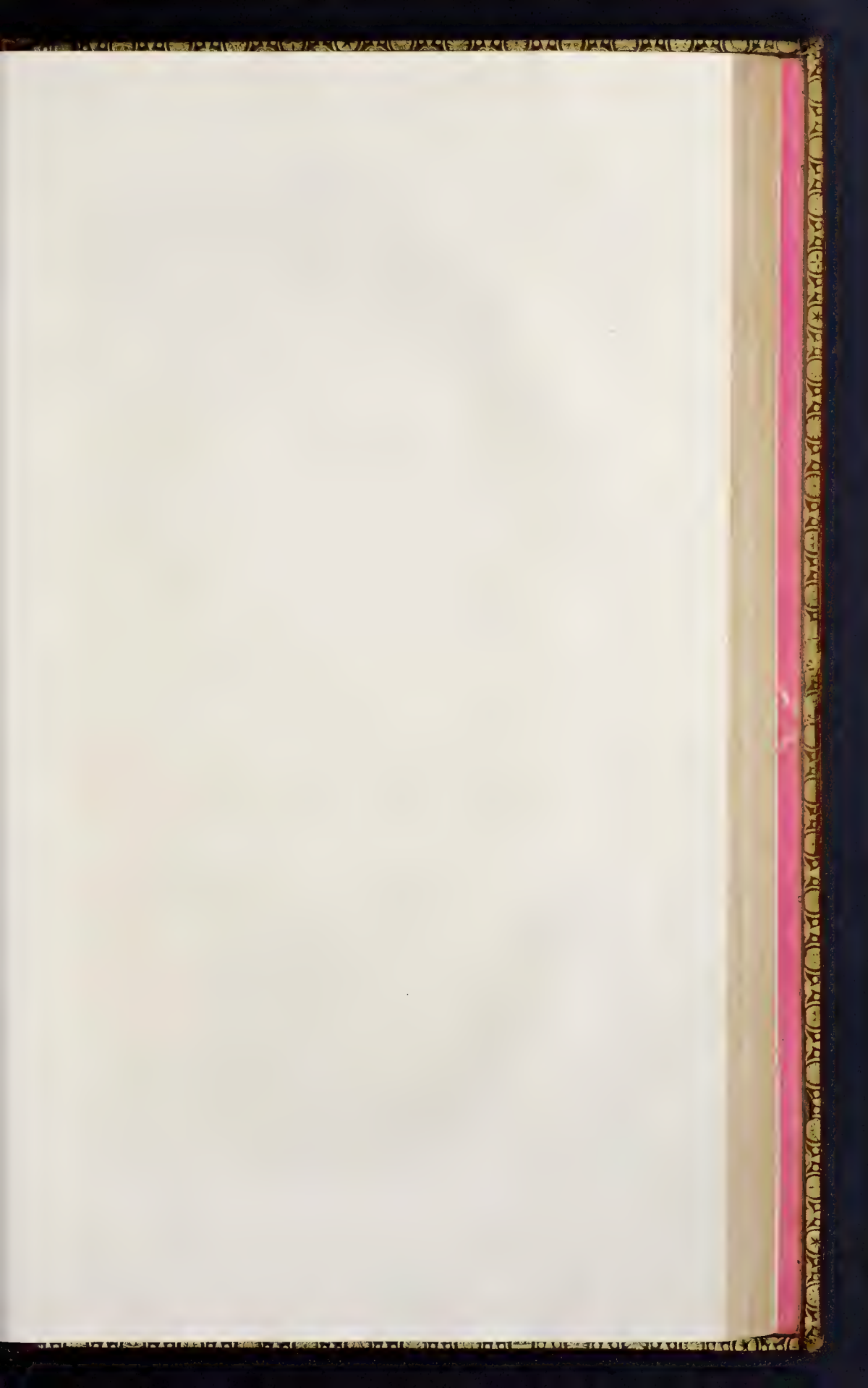
When an order is employed in decorating a door, there should also be columns in the construction of the chimney-piece; but they must be placed in the lower part; not in the upper. They must be upon the ground, not in the air. It is their natural position to rest upon the ground; and he who takes them out of that place in a chimney-piece, is commonly guilty of an absurdity.

When there are columns below in their proper place, it is still wrong to add any above; for they are not of the nature of those decorations which should have place there. They are too massy and uncouth. But if this placing them in the upper work, over others in the lower, be wrong, the absurdity is tenfold in those instances we have named, where there is only the common ornament below: it would be as proper to stick them against the walls in other parts of the room.

When the correspondence of ornament requires columns at the chimney, let them always be placed as we have directed in treating of that article. In that case they rest upon the hearth, and they support the mantle-piece. This is natural; and so is the continued work above them; more natural than in any other case, because they afford it a just and proper support.

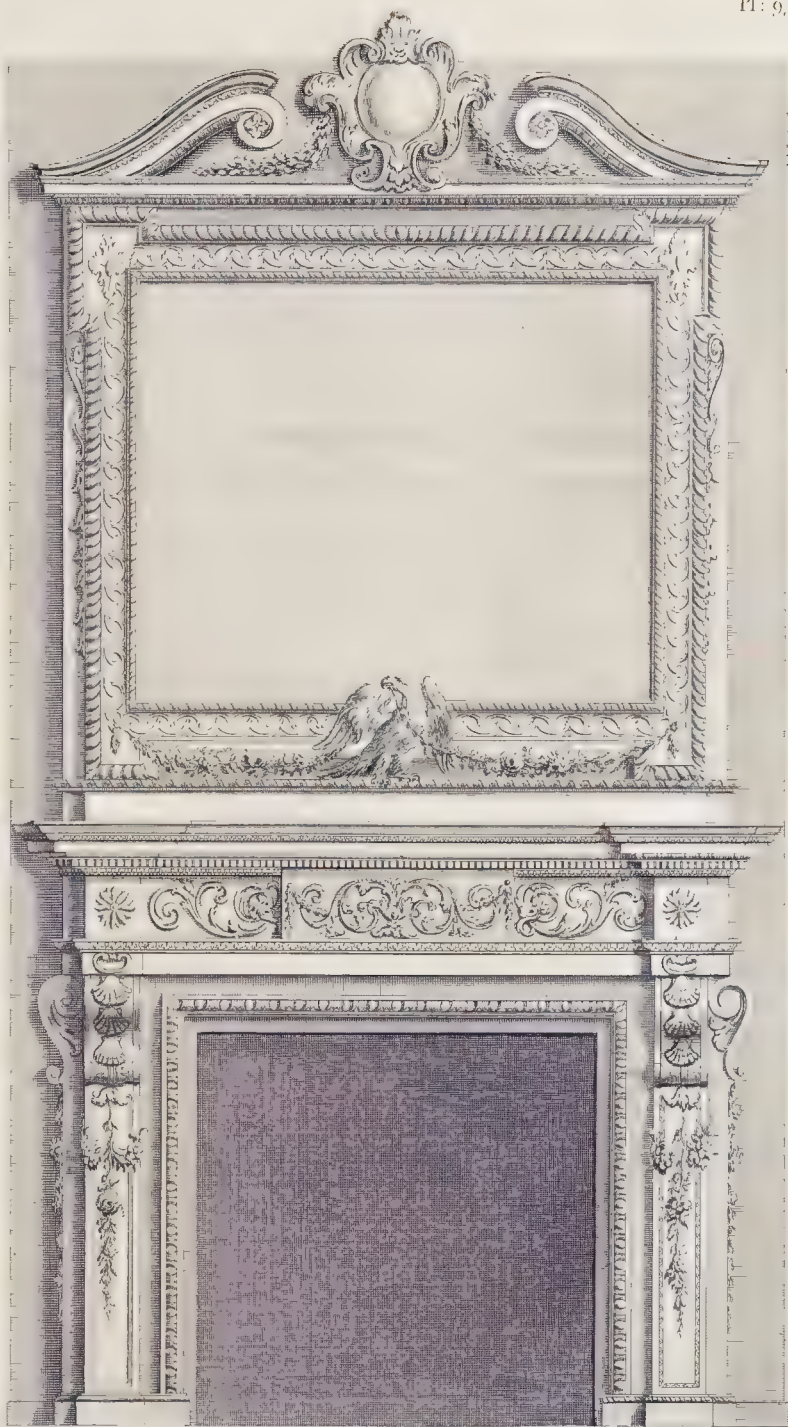
It is this part of the chimney that must correspond with the doors, and the ornament above is to agree with that of the other finishings of like height. These are mouldings of wainscot, or pannels of stucco, or the like divisions. It is with these the eye compares this upper part; and, while it corresponds with these in the nature of its ornaments, the shape and place, for in both these articles it differs from all, will sufficiently vary the whole.

What we have observed with respect to columns, holds universally in regard to the other ornaments of doors. The lower part of the chimney ought always to hold a correspondence with them. This must not be so servile as to copy the parts or particular mouldings: but as we have directed, that when one of the orders is employed upon a door, another order should be used for the chimney, upon the same principle we add, that whatever kind of ornaments are placed about the door, something of the same kind must be done in the lower part of the chimney. Often this is to be carried through a great part of the lower work; but it is enough if the eye perceive it in the inner edge of the whole, or in any other conspicuous part.





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As this portion of the chimney-piece is to be an improved resemblance of the door-cases, in the same manner the upper work is to bear a likeness in all its parts to the finishings of the rest of the room; but it is to be enriched beyond them. Chap. 29.

The form it must carry will be that of a compartment, determined in breadth by the lower part of the chimney, and in height by the loftiness of the room. When the lower work of the chimney is narrow, less labour should be employed upon the upper, for it will share the narrowness of the bottom, and be incapable from thence of great dignity. Therefore, when the young architect sees a room that, from its other finishings, will require a rich continued chimney, let him set out with giving it a sufficient extent in breadth below. On this absolutely depends the breadth of the upper work, and consequently its dignity.

To throw this at once before the eye of the practical architect, we have represented, in Plates 92 and 93, a continued chimney-piece of the narrower, and one of the broader kind.

Of both these we shall have occasion to speak more hereafter; but in the present case they serve very strongly to illustrate the truth of our observation, that the noble air of a continued chimney-piece can only arise from a sufficient extent of the lower work in breadth.

C H A P. XXIX.

Of the upper work.

THE student who understands the design and nature of the continuation of a chimney-piece; where to use it, and in what manner and degree to adapt its ornaments to the particular purpose, may proceed to the designing its several parts.

How far the construction of the lower part of the chimney is concerned in this, we have shewn. A continuation of ornament may be carried up from any chimney-piece whatsoever, the due care being taken to adapt it to the proper form of that lower part: and consequently, if that be proper, the whole will be of the same character.

This may at any time be done occasionally; but we advise otherwise. We would not have our student design his chimney, and then think of an upper part for it; but forming the whole as one work, and keeping in his eye all the parts while he is making the figure of each, he will that way alone render it compleat and uniform.

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If he design an upper work of flight construction, let him make it of a lighter kind; but where he intends a great deal of ornament, the first care must be for a sufficient solidity and decoration below.

The two figures given in Plates 92 and 93, will at one sight lay this difference before the eye of the student; and we shall explain it by a more express detail. In the first of these, Plate 92, the work in the upper part being light and narrow, a chimney-piece with no great appearance of solidity, or profusion of ornament, serves very well to support it: but in the other, Plate 93, the upper work being larger and heavier, the chimney-piece itself is made stronger in proportion; and as the continued part is more rich, the lower half has also more ornament.

The general construction of the chimney being the same when it is thus continued to the height of the room, and when it terminates at the mantle-piece, or its finishing course, we shall not repeat any thing here of the rules already laid down for its construction; but, supposing a chimney-piece of the common kind, and of moderate expence, to be the lower part, consider the lighter and less expensive upper work suited to it.

This upper work naturally represents a kind of frame; but it is not to be placed directly upon the mantle-piece, for in that case it would either be of an enormous height in proportion to the breadth, or it would not reach toward the ceiling in the manner which is the true purpose of these constructions.

Therefore upon the mantle-piece let there be raised a course, pedestal high in proportion to the other parts of the chimney. Let the outline of this be in the perpendicular, the same with that of the side of the chimney-piece, not the extent of the mantle-piece. Thus it will seem supported by the side-work of the chimney, and consequently in a condition to support the rest of the work.

Let this have its proper distinctions of base, die, and cap; and let there be some slight ornament of sculpture at those divisions.

Upon this is to be raised the upper work, whose height must be governed by that of the room, and its form a square, or long square.

In this, when rightly constructed, there will be always some proper resemblance of the structure of the chimney. Thus let the student begin, by raising from the extreme edge of the pedestal a perpendicular line, which will form the verge of a side corresponding each way with that of the chimney-piece below; only that it must be narrower, because the upper work must always seem lighter than that below. These two sides are to support a cornice in the manner of another mantle-piece, and from the middle part of this is to be raised a pediment.

This compleats the outline of the work: it may be made entire; but that is not right, because it gives an aspect of weight improper for an ornament that stands so high.

Of the two forms of the pediment, it may be either pointed or round; but when-
 ever it is made entire, the pointed form should be preferred, because of the two it
 is lightest. Chap. 30.

This is a construction however which the judicious eye will always dislike; and
 there is not only more propriety, but more room for ornament in a broken or open
 pediment.

Let this be a determined point, that the pediment be open; and the lighter the
 work, the more necessity there is of its being so. As to the two forms, they are di-
 rected by the same rule. The rounded pediment is heavier, as well when open as when
 entire; and therefore it should always be kept for the chimney-pieces which have
 the heaviest ornaments; and the pointed for the lighter. The difference between
 these two kinds in appearance of weight, is much greater when they are broken in
 this kind of work, than when they are entire; for the broken pointed pediment
 ends at the abrupt line: but when the rounded or arched pediment is broken, the
 inner members are to be rolled in spirally; and this, at the same time that it is a great
 ornament, is an indication of weight, which we have directed the student to avoid,
 even in appearance, in the construction of the upper part of the present work.

This difference in the two kinds of pediment will be seen in the two figures 92
 and 93; and, being once understood, we may return to our first design, which, be-
 ing of the plainer kind, is represented in the first of those plates.

The student who has used his pencil as thus far directed, has now the outline of
 his whole work upon paper; a pedestal continued over the mantle-piece of a com-
 mon chimney supports two narrow sides; these are crowned with a handsome cor-
 nice, and from the midst of that rises a broken-pointed pediment.

C H A P. XXX.

Of the decorations.

THIS is the field, of which his genius is to make the most by the addition of
 ornament; and his judgment is to disclose itself in forming that ornament of
 a proper kind, such as will best suit a chimney.

Now, although the sides he has raised can very well support all that is above
 them; yet the cornice having the air of another mantle-piece, will very well bear
 the appearance of farther support from a couple of scrolls: these may be decorated,
 each with an acanthus leaf falling down them, which will display itself very hap-
 pily, because of their waved outline; and in the broken pediment may be placed a
 N° 62. 7 M vase,

Book VI. vase: thus the larger and more obvious articles of ornament are laid in, and for all that can be added sculpture answers the purpose.

We have declared against heavy ornaments in places so raised as the top of a continued chimney-piece; but as the cornice in this case has the strength of a couple of scrolls as brackets, the vase, though heavier than we should otherwise chuse, will have the appearance of a support.

The sides terminated at the top by these scrolls, must not, in a chimney of any tolerable degree of ornament, be left plain.

It will be easy to mark out a long compartment in each by sculpture, continued within a small distance of the two sides and bottom: at the top these two lines may join the scroll; and from the bottom of that ornament may be dropt a light festoon almost to the bottom. This will give sufficient beauty to the sides, and the pannel marked in as just directed, will seem a frame to it. The vase may also be loaded with fruit and flowers; and these may be suffered to run over on each side in a light festoon, continued in a bended line each way to the angle made by the inside of the pediment and the cornice.

Thus a good form of a continued work is laid in; but there is too much vacancy within. It is intended that the space shall be large, but it is now too large. The designer must reduce it; and the means of this will compleat the ornaments. Let him place within this a kind of frame; let the sides of it join the inner edge of the two upright parts which support the cornice. At their tops let them rise to the cornice, and at their bottoms rest upon the pedestal raised over the mantle-piece: thus let the two sides of the intended frame fill the space, but let the outline of each of the ends recede a little from the inner line of the cornice at top, and from the cap of the pedestal at the bottom. This will have a double advantage: it will at once give a relief and lightness to the general work, and a swelling to the corners that will be very agreeable.

This frame, for such a work of moderate expence as we here intend, may consist of an outer and an inner moulding, ornamented with light sculpture; and the middle space with fret. The corners, which swell up and down, may receive a rose or other flower; and thus the frame is compleated; the space is reduced to a moderate proportion, and all appears uniform and rational.

If any thing more be intended, it must be given by some additional sculpture. The cornice and its pediment are the proper scenes for this: their mouldings will receive the ornaments of the chissel, and shew them very conspicuously. This done, the only blank will appear in the face of the pedestal, which rises from the mantle-piece, and supports the upper work; and it will be easy to dispose upon that any lighter or richer ornament, according to the occasion.

C H A P. XXXI.

Of a richer continued chimney-piece.

THE student has thus a full and clear idea of the continued chimney-piece, and its due proportion. He has seen one raised upon the plainer model, and he will therefore with ease rise to such as require more ornament.

In this, as in the other, let him design the whole together: let him not construct his lower part first, and afterwards contrive a top to it; but, beginning with the whole in his imagination, so prepare one half that it may support the other with propriety, and give scope to all his invention.

We have said already, that a due breadth is essential to dignity in the upper work of these chimneys; therefore let him begin by designing a chimney of due extent below; and, as there cannot be this needful dignity without some weight, let him give the lower part a solidity to support it.

In this view, when he has designed the lower part in the usual way, let him add breadth to its outline, and solidity with ornament. This will be easily understood by a review of the lower part in our 93d figure. A chimney-piece is there raised with firm sides, supporting a weighty mantle-piece, resting upon the scrolls, from which festoons drop, as are mentioned in the sides of the upper work in the preceding instance; but beyond these sides the work is continued. Scrolls are added at the same height in a contrary direction; and the mantle piece being thus doubly supported, is perfectly adapted to carry the upper work.

Nor is the addition of strength given this way without great ornament. The profile of one of these scrolls on each side is seen with the face of the other, and there is at once a variety and regularity, the great purpose of judicious architects.

The sides, with their scrolls in profile, terminate the outward line of the lower part; and within them is to be a handsome moulding, placed at some distance, separated by a plain piece, with another plain between that and the cavity, terminating the inner line of the chimney-piece.

Upon this, as upon the projecting sides, also is to rest the cornice, with its other parts, forming the whole mantle-piece. These must be large and massy, proportioned to their supports, and to the superincumbent weight of ornament; and thus will be completed the under part of the work, of a strength to bear a rich upper part, and of a breadth to allow it sufficient scope.

Book VI. This upper part is to consist of a frame raised a little height above the mantle-piece, and terminated at the top by a cornice with its pediment; but in this, as the frame is designed like the rest to be more rich, it will be proper to let its corners support the cornice, instead of raising fides for that purpose, as in the preceding instance.

Upon this plan let the designer carry a slight course, pedestal-fashion above the mantle-piece, and let him raise upon this a flat back, or at least an outside resemblance of one, parallel with the outline of the lower part of the chimney. This is to be the field to receive the frame or proper ornament; and that we are now to consider. Let its outline rise perpendicular over the second line of the chimney, as the outline of the back did over the exterior. At the top let this on each side swell out to form a square corner, and let the top-line sink, and the lower rise, as in the preceding instance, to give the due extent every way to these corners. The outline of the frame thus formed, let its inner line be struck at a due distance within to admit enough room for ornament, and upon this let the cornice be placed. The two rising square corners of the frame will very well answer for the needful appearance of a support to this, as the frame itself has so much the aspect of solidity.

Upon this cornice is to be raised the pediment, which must be open for the reception of a figure of some kind, and for the sake of lightness, although in this open state it will yet have an air of much greater solidity than the other.

Let the pediment in this case be one of a low pitch; and its opening must be large. The outer mouldings must be made to turn in with a small sweep, for there is much more beauty in that form than in the cutting them off at an exact degree in a plain line; and there will be a great deal of beauty added to the figure by the turning the inner half of it in a round manner.

This done, the paper shews the outline of the several parts; and there requires nothing farther but the ornaments. Of these we shall treat together, because we would have them appropriated to each part, yet correspondent one with another.

C H A P. XXXII.

Of the ornaments.

WE have named the festoons on the sides of the chimney; and they are the principal ornament of the lower part. Let them be made rich; and wrought with large flowers. Let the moulding of the inner part be also decorated with some sculpture; and no more will be required in this place. The mouldings, and other parts of the chimney-piece below, must thus be enriched by proper sculpture, that they may correspond with the work above. The particular directions on this head need not be repeated here: we refer to the chapters wherein we have treated of plain or simple chimney-pieces.

The upper work is the proper business of this place, and to that the student is now to raise his imagination. He has the form of a vase, supporting a cornice, and upon that an open pediment: he is to fill the open space left there, and to give something correspondent to it below; and he is to enrich the frame.

These are the three points. And with regard to the first, or most essential, the proper direction is, that whatever be placed in that opening, be light. The frame in this case supports the cornice on which the pediment is raised, without the assistance of two regular sides, as in the preceding instance; therefore less weight must be added, because the support is less. A vase, tho' proper there, would have an aspect of too much weight here; and nothing is so proper as a shield, surrounded with some loose ornament.

This, with a sufficient bigness, will have little weight; and there may fall from its sides, as from the top of the vase, festoons of flowers: these may either be lost upon the flat of the cornice, or continued to the angle, at the pleasure of the sculptor: it is indifferent in point of propriety.

Let our designer now review his drawing: he will see that the common ornaments of the tablet over the centre of the fire-place, and the shield at top, give an air of nakedness to the bottom of the frame.

This must not be suffered in a piece of work intended to be so ornamental: some figure must be considered to fill it.

The student has the whole range of Nature for his scope and compass, and, from among the animal kind, may select what he pleases. In the 93d plate, where we have represented a chimney-piece of this kind, we have placed an eagle in this point of view, dropping from her beak each way a festoon, which covers the

Book VI. space left by the raising the under line of the frame, and is fastened each way in the square of the bottom of the frame. This is perhaps as proper a figure as can be supplied from all the round of Nature, for there is a nobleness of aspect in this bird: and the spreading of its wings, and free representation of its feathers, will have a very fine effect. A bust may supply its place, or any other form of a living creature; but those figures are most proper in which there is the greatest freedom.

Thus much finished, there is only the consideration of the frame, and its ornament is easily appropriated. The outside should be enriched with large and bold sculpture, and the inner moulding should be wrought with care. The inside-space, which we decorated with fret-work in the other design, may be finished in the same manner here; but it will be better to give it some design of more elegance. From the square of the upper corner there may fall a scroll and festoon sideways: these will finish the design. They must be light, because there is little space for them: but they will have a very good effect; for beside the filling a disagreeable blank, the scrolls, small as they are, will yet have an aspect of supporting the square corners which hold up the cornice.

C H A P. XXXIII.

Of simple chimney-pieces, with various ornaments.

THE student knows we understand by a simple chimney, one which terminates at the mantle-piece, and is the proper kind for a parlour that is hung with paper. It is not limited to this alone, but may be a fit ornament in any room not of the most magnificent kind; but the propriety is in the use we have named.

Variety of forms and ornaments must be considered by the architect for this purpose; and, to those we have given in the first chapters on that head, we shall now add some others.

We will suppose a plain, and not large room is hung, and is to have a chimney suited to it: the orders we will suppose are by the proprietor excluded, and perhaps by a regular consideration, the room not being of magnificence to renew them.

The owner is tired of the same dull repetition he sees in common rooms; and he desires, tho' without a great expence, to have something handsome and new.

The ornaments we added to the sides of the preceding continued chimney-piece, may be very well appropriated to this; and they will give a figure very different from the common kind. The ornaments we mean are those scrolls which stood sideways in the continued chimney before mentioned, and which we propose to place in the same manner here.

This is to be the foundation of the work; and to this, as it is something singular, Chap. 33.
is to be adapted every other part.

Thus much premised, let the designer mark in his whole space of extent for the intended chimney, and within that outline let him thus begin the construction of the several parts.

From the hearth let him raise a bold, square plinth to the measure of the outline, and somewhat backward.

Just within this, and more projecting forward, let him raise another plinth of the same height, and somewhat more in breadth. These are the proper foundations of the work.

Upon the inner plinth, on each side, let him raise a plain perpendicular piece, with a handsome moulding on the inner edge, and a slip of plain marble within that: let the rest of these two sides be perfectly plain; and for the top lay on such another piece, terminated by a moulding inward; and for the rest admitting no ornament, but a good polish.

Thus is laid the foundation of our chimney-piece: this is the simplest and plainest form in which such a piece of work could be constructed; for these three parts make a kind of chimney-piece alone; and from this the student may learn that the happiest ornaments are those added to plain propriety.

On the outer plinth, which is placed somewhat backward, raise on each side a scroll of the usual form: let its head be level with the aperture of the chimney, or lower edge of the upper piece; and let it here swell into roundness in the usual way; thence continuing hollow to the middle, and then swelling out a little again for the foot by way of support.

Upon the head of this scroll, on each side, let a plain piece rest, of the breadth of the upper piece of the frame; and let it have a moulding when it rests upon the head of the scroll, which will answer exactly in this disposition to the moulding on the lower edge of this part.

Thus is the chimney carried in a plain way (for we shall speak of its few ornaments afterwards) up to the due height of the frame; and upon the level top of it is to rest the mantelpiece.

This must be correspondent to the lower part; that is, it must be handsome without great expence; and singular without absurdity.

We have contrived for a various projection of the parts in the bringing forward of the sides: it will be well to make it consist only of a freeze and cornice; the plain upper piece of the frame, and the correspondent small piece over the scrolls, standing to the eye in the place of an architrave.

Book VI.

It will not be easy or proper to give the cornice any more than two projections; that is, its whole level face uniform, and the parts over the two scrolls receding. The propriety of rule ties us down to this; but it is not so in the freeze: that, instead of three, may be made to consist of seven parts; and though the projections are in reality but two, they will appear numerous from their alternate mixture, and will have all the force and charm of variety.

The two sides project beyond the scrolls. Let a piece of the same breadth be continued over these, and let it project to their level: let the whole freeze beside be of the level of the piece above the scroll; and in the center let there be a tablet projecting to the level of the two pieces over the sides. This will give the appearance of seven different projections; though in reality there are only two, since no two that stand together are alike. Indeed they may at the pleasure of the architect be carried farther, for the tablet in the middle may have a projection different from that of the pieces over the sides; and the parts of the freeze over the scrolls may recede deeper than the common course of the freeze. This is in the pleasure of the architect; but we advise the former method, that the whole plain course of the freeze be of the same level, and the projections be equal.

Let the designer bestow a due attention upon this part of the work, for it is all that requires invention; the cornice demanding no particular thought for its construction.

We have divided our freeze into seven parts, a tablet in the center, a piece over each of the sides, and four receding parts over that part of the chimney on each side of the tablet, and one over each of the scrolls.

Of the ornaments we shall speak separately; so that all we have farther to consider in this chapter, is the cornice, in whose form there need be nothing particular; nor is any other care required than to stop the plain face with a sharp edge, where it terminates at the recess over the scrolls, and to work the several mouldings with truth.

C H A P. XXXIV.

Of the ornaments.

THESE most regard the freeze; and, of all its parts, the central tablet is the principal: that will attract the eye first, and detain it longest; and consequently upon that it is needful to bestow the greatest attention. With respect to its form, that of an oblong square would first come into the architect's thought; but something may properly be added to it.

The freeze cannot be very deep in a chimney-piece of this kind; and as it is proper to give a conspicuous air to the ornament of this part, nothing can be more judicious than to drop it into the upper member of the frame.

When the young architect has learned what it will be right to do, the next consideration is how to do it.

The whole tablet may be let into this upper piece of the frame; but it will then appear heavy. It will look like a botch, and seem to say the freeze was ill constructed for its ornaments.

This must be avoided by all means; for as it is fit the architect should in his own mind lay the plan for the whole together, it is also fit that the eye should discover at once that there had been such a contrivance. To this purpose, in the present instance, let the tablet drop into the upper member of the frame only in the middle; the two side-parts being of the breadth of the freeze. This will give the tablet itself a more handsome shape than that of a plain square, and will suit it very happily to receive the ornament that is most proper for it.

This may be of various kinds; but there is none so fit as a head: and as this will fill the deeper space, and leave almost a necessity of short festoons on the two sides, where the tablet is less deep, the two faces most happily suited to the purpose are those of Bacchus or Flora. Round the one may be an intermingled wreath of grapes and foliage among the hair, which may run off on each side to fill the narrower part of the tablet with a fruit-festoon; and round the other a wreath of roses and anemones, which may in the same manner be continued into that vacant part. Pomona may take the place of Bacchus, but the fruits are properly of the larger kind; or Ceres may be placed instead of Flora, but her ornaments are less elegant. One of these, after all consideration, will be found the best.

Chap. 34. Where there is a plain tablet, an Apollo's head is very proper, because of the rays; but it would be irregular here.

The tablet thus covered, the two spaces on each side of it come under consideration. These are oblong, and of moderate breadth: they will receive very happily a cornucopia in each. In this case there is one plain and natural direction to be observed. As the tablet is crowded with flowers and fruit to the edges, let the naked ends of the horns come to that part; and as it will be proper to give some peculiar ornament to the piece over each side, which terminates the space, that will not be of the flower or fruit kind, the broad mouth of the horn may each way terminate a little short of that, and pour out every way its fruit and other treasures.

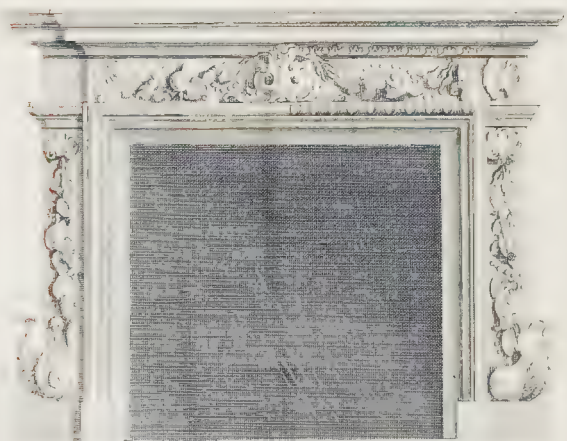
The student will see, that, in the decoration of this freeze, we study diversity as well as beauty. Hitherto the several parts are sufficiently distinguished from one another: the face in the center is well surrounded with flowers; the curled ends of the horns come near that, and separate to a sufficient distance the treasures they pour out at the other end of the space.

The piece over the side, which separates this from the small receding part of the freeze over each scroll, may be decorated with a radiant star; and then, in that receding part, it will be very proper to place a bunch of grapes, or some other conspicuous cluster of fruits. Indeed, if a Bacchus' head be placed on the tablet, we by all means recommend grapes here, preferably to any other ornament; and, on the same account, if the head were a Flora, we should advise the placing on these parts a rose, or some other conspicuous and large flower; for the distance between this part and the tablet, with the several intervening objects sufficiently prevent it being considered as a repetition; and, when that danger is not in the way, there is a happiness instead of a fault in this method, because it continues the subject; and there is a pleasure in seeing under what variety the same thought and design may be preserved.

The principal affair of the freeze being thus determined, little is required for the decoration of the other parts.

The scrolls must have their common spiral upon the shoulder; and as the only vacant space will then be in the side under the volute of that part, a large flower may very happily be placed there, from which there may be dropped a light and small festoon.

All that need be done farther, is the decorating some of the mouldings with sculpture. The cornice will be the principal scene of this decoration; and as it is most in sight, there will be propriety in giving it the greater share of these ornaments. The moulding that surrounds the frame on the inside of the chimney may also have the same decoration.



C H A P. XXXV.

Of a marine chimney-piece.

BY this term is meant a chimney-piece, all the ornaments of which are taken from marine or sea subjects. These are in themselves extremely numerous, full of beauty, and full of variety. The whose scope and series of them are in the choice of the architect on such an occasion; and his judgment is to display itself in a proper choice among the multiplicity of forms, and a just assortment and continuation of those he chuses.

The first direction we shall give the young architect on this head, is to review the variety of Nature, and take his choice among them. Let him not limit his fancy by the small number that have been used by others; there are not only more, but better. The architects of the present time do not sufficiently study Nature; and it is in the works alone of those who have professedly treated of these subjects, that he who would be eminent in this part of his business must study the means.

This path rightly followed, there will be a source of beauty and variety opened that no practice can exhaust; and from such stores, not on the imitation of the works of others, we would have the architect go upon the design of this chimney.

Let him, as usual, mark in a general outline to circumscribe the compass it should fill; and within this, upon the level of the hearth, let him first raise two small plinths, as in the preceding design; only that here the greater one being destined for the support of the ornamented part, must be considerably larger than the other.

On the first of these let him raise two perpendicular sides, consisting only of a few large mouldings, with a flat ledge within them; and upon these let there rest a third piece of the same kind and form. This makes what may be called the frame of the chimney-work; and about this are to be disposed the ornaments.

Upon the second or broader plinth, on each side, which are to recede a little for the advantage of light and shade, let him raise two flat and upright pieces; to be the field, whereon to place the ornaments.

These are to terminate, as the scroll in the other design, at the height of the opening of the chimney; and they are there to be crowned each with its head of mouldings. These may be more considerable than those of the other chimney-piece, because the pieces which they terminate are the most considerable part.

Book VI. Thus is the body of the chimney-piece to be designed; and upon this level top made by the frame, and the outside pieces, is to be raised the mantle-piece. This is to consist of a freeze and cornice; and for the reception of the intended ornaments, the freeze must be broad.

Thus is finished the plain form of the mantle-piece, and its support; and this the most unaccustomed to the science will, we hope, understand. We have for that purpose avoided in these descriptions of the parts, not only the technical terms of authors, but those in the trade.

The chimney-piece finished thus perfectly plain, would be of no disagreeable form; but we propose to enrich it with very elegant, tho' not expensive ornaments.

C H A P. XXXVI.

Of the decoration of this chimney-piece.

THE student sees two parts are in this work allotted for the reception of ornament, the flat pieces carried up the sides, and the freeze under the cornice of the mantle-piece. In these pieces the center of the freeze is understood to be the point of principal ornament: it is there the tablet is placed in those chimney-pieces which receive that addition; and in others the principal figure naturally takes its place where such a tablet would stand.

The most natural, as well as the most common ornament in this place, is a head of some kind; and the rest of the freeze is usually, and not ungracefully, filled with a couple of festoons that rise from it.

We are not in this instance about to prevent the student from following the course of custom, but would have him compose his festoons of such subjects as are most suited to the occasion, and chuse his head from those kinds which have correspondence with the rest. In general, festoons are made of flowers and fruits; and the head placed as a decoration to the chimney-piece, is that of some Heathen deity.

Neptune's head might answer in this place, or that of a sea-nymph; but the first would be too coarse for the work, and the latter might be misunderstood. It will therefore be most proper to place there the head of some large fish; not of the shark, because the armour of its mouth naturally creates terror; but that of some other inoffensive kind, the whale, or the figure heralds give of the dolphins.

These will not fail to please every eye when the rest of the chimney is decorated Chap. 6. in the intended manner; but if neither of these suit the taste of the architect, he may give a figure from fancy, only taking care that it resemble so much a fish's head, that every eye may distinguish that it is designed for one.

This principal figure being placed in the centre of the freeze, the two sides are to be filled with festoons. Let the architect form a general outline of these, marking their breadth; and let him bring each from one side of the head; and, after dropping it down in the middle, let him raise up the other end to the top of the freeze at its extremity.

This is to be the course of the festoon; but with respect to its parts, they should be correspondent to the general design, and made of shells. Of these the sea affords a variety altogether endless; and among them are a thousand different forms, which may be happily twisted together in this design. The body of the festoon may be thus diversified with the figures of the shells; and the pearl-oyster being introduced among the rest, may scatter over the edge its glittering treasures.

The sides are to be decorated with the same kind of subjects: but as they have a different direction, those objects may be placed in a various manner.

At the top of each may very properly be placed a scallop, and from its base may hang a festoon of other shells: these may be chosen so as to diversify the whole by their unlikeness to the others, as well as to exhibit a pleasing number of forms: and upon the plinth of this piece may rest a large conch, turning up its wide and open mouth, as if gaping for the dropping festoon, loaded with smaller shells, and scattered pearls as in the freeze.

There will remain a square piece undecorated at the top of each of these sides above their mouldings, and upon a level with the freeze. This will admit a peculiar beauty by means of the diversity of light and shade afforded by its receding; and in this should also be placed one large shell. For the rest nothing can be added, but sculpture to the mouldings; and this we advise not to be too lavishly allowed them. They should not be left altogether plain, because the quantity of work upon the sides requires some decoration in these parts; but neither should the chisel be allowed to rest too long upon them. They should not be plain, because that would ill agree with the rest; and they should not be much adorned, because the eye is intended to be detained but little upon them: the peculiar ornaments of the sides being the intended objects of the attention.

Little need be said with regard to the materials of which this chimney should be made. The quantity of ornament, and its nature, require that there should be no confusion in the lights and shadows. This declares a marble of one colour to be the only kind fit for the purpose; and of these sorts there is none so proper as the plain white.

Of a small chimney-piece, with sculptured mouldings.

THE last design was of a kind where the beauty of the work results from the variety of added ornaments. What we are here to treat of has its elegance from a plainer, more familiar, and less expensive source; and yet in many cases is full as pleasing. That was fit for particular purposes; for the study of an admiral, or the library of a naturalist, where it might stand independent of every thing else, and yet be sure to please. It could not fail to affect the imagination by its novelty, nor to please by the variety of its ornaments, and by the beauty of the single figures, as well as by their disposition. That which we here propose is one of a more generally useful kind; and we shall introduce the reader to it as to the others, by forming a supposition of its place and use.

A parlour, we will suppose, is to be decorated with sculptured mouldings upon wainscot pannels, and a chimney is to be suited to it in point of expence and figure. This must have the same kind of decorations, and its ornaments of a higher order. Whatever be allowed in this way must not be repugnant to it. This is the kind of work we propose here; and the student must thus design it. Columns would be too noble, and they would not suit the room: fanciful ornaments are not to be received, because the rest of the finishings are of a plain, tho' handsome kind; and the designer has only the form of a common chimney-piece in his power, and can use nothing so well as scrolls to support the mantle-piece. Let him mark a general outline for the whole, and then consider its source of ornament.

As many things are with-held, he is to make the most of those which are free to him: and let him first consider the advantages that may arise from light and shadow. Let him upon the level of the hearth lay in three, square plinths; the inner one largest, and most forward, and the other two gradually smaller, and gradually receding. Thus there will be the foundation of three general projections in the upper work; and, in the principal of these, there may from its breadth be some other variations of the same kind.

Let him now begin with the inner plinth, and raise upon it on each side a perpendicular, formed of three pieces in three different projections; that which recedes most being inward.

These raised, let there be laid over them a third of the same form. This, as in the preceding instances, makes the frame or first work of the chimney. Over this let him

him design the flat plate as a freeze; and then beginning from the bottom again, let him raise his second perpendicular piece. Chap. 38.

This, from the decreased bigness of the plinth, will be narrower than the former; and it must be terminated at the top by a handsome scroll, whose head must be on a level with the top of the freeze.

The third perpendicular is now to be raised upon the most backward plinth; and this must be according to that part narrower than either of the others; and must terminate plain at the same height with the head of the scroll and the freeze. Thus there will be a regular extended surface, upon which our student is to design the cornice for his mantle-piece; in which his care must be, to strike the several parts and mouldings with truth, according to the directions given before under their various heads. Thus will rise the whole form and figure of a chimney-piece, such as we have represented in the first figure on our goth plate; and, to finish it to the purpose we have here proposed, there will require only a natural succession of ornaments along the parts and places where they will be most conspicuous.

C H A P. XXXVIII.

Of the decorations of such a chimney.

THE purpose being to suit this chimney-piece to a room where the mouldings of the wainscot are carved, the mouldings here must have the same ornament. There will be two upon the inner form of the chimney-piece, which will very properly receive the chissel; and these being separated by a broad piece, which is plain, may be enriched as highly as the artist pleases.

We have given in the figure the sketch of a light ornament, which may be given to this plain part; but it is better to leave it untouched. The beauty of the mouldings will be seen distinctly, if separated by this plainness; but when there is sculpture in this intermediate part, the eye is lost and bewildered, and sees nothing distinctly.

The mouldings of the cornice are next: to these there is to be allowed a great deal of sculpture. It is the most conspicuous part, and for that reason demands to be made the most elegant. It is also upon a level with the eye standing, and will be considered more naturally than any other part in the same view with those mouldings of the wainscot, with which it is the art of the architect to make it correspond.

The great judgment will be, in this place, to throw in the needful quantity of ornament without confusion. We have told our student on repeated occasions, that the

Book VI. great beauty of carved mouldings is to be seen distinctly. To this purpose nothing is so useful as the intervention of plain parts. When the quantity of sculpture required does not admit of that relief to the eye, the greatest care must be in varying the kind of sculpture on the several parts, so that the difference of the figure in the several members may occasion the eye to see them all distinctly. This we have attempted in the cornice of this chimney-piece; and the student will at once find in it as much decoration as can be desired, and yet no confusion.

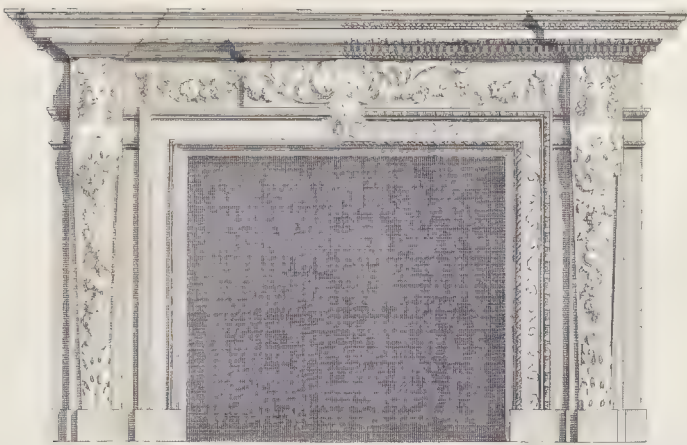
The mouldings thus decorated, there remains but little to the finishing this piece. Two parts alone are vacant that would bear ornament: these are the freeze, and the two upright pieces, which are terminated by the scrolls.

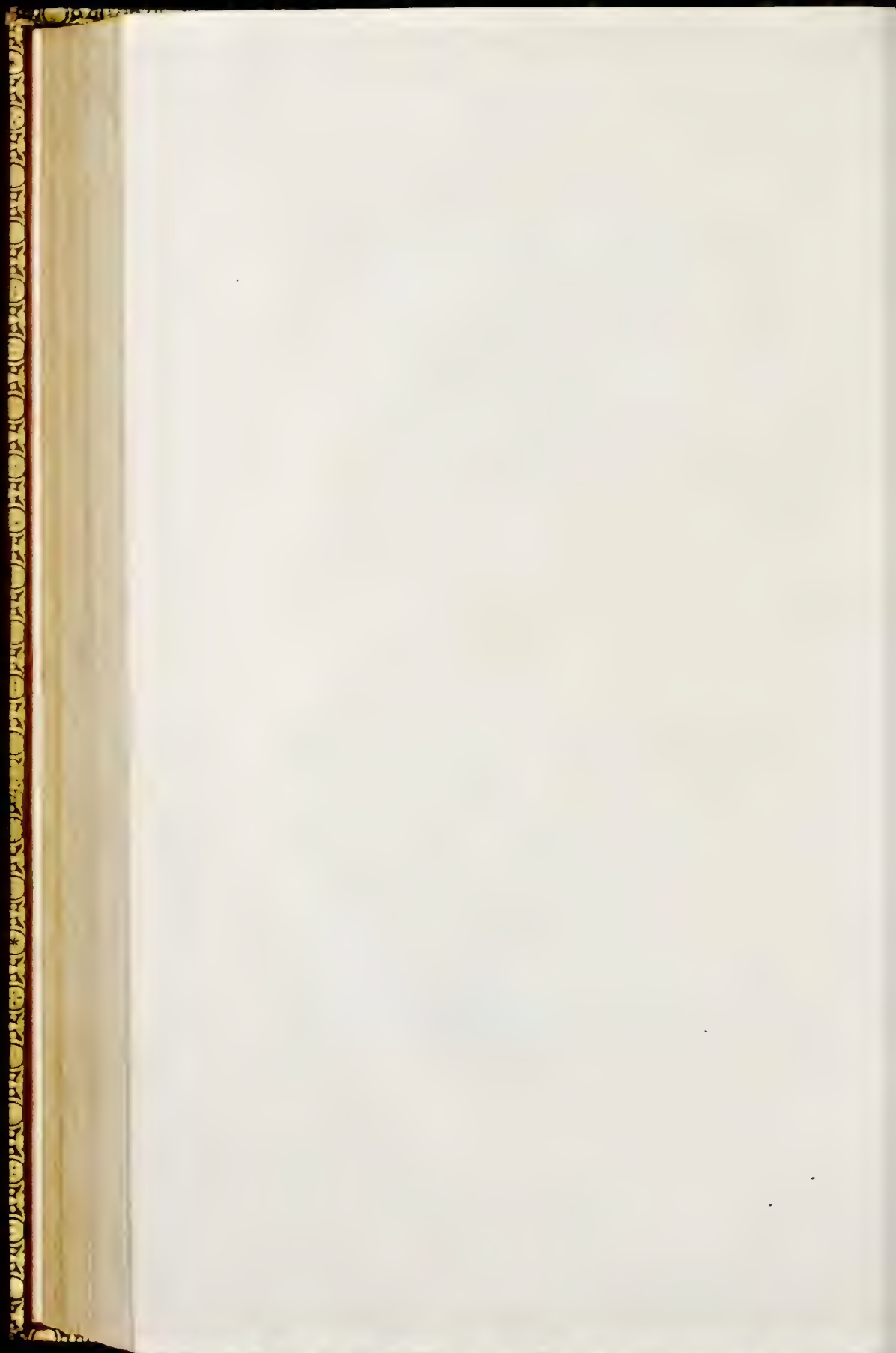
In the freeze the ornament must not be heavy, yet it must be conspicuous. The head of some Heathen deity, crowned with a wreath of flowers, will very well answer the purpose in the centre; and from this, on each side, must be continued a festoon of large loose work, nearly to the extremes.

The top of the scroll may very properly be ornamented with a scollop shell; and its natural riches will be a sufficient decoration to the body of it. The bottom may be covered with the end of an acanthus leaf; and from this may drop a festoon of flowers: these must have a moderate projection, and the care of the designer should be to form the festoon of such as have no small parts. The projection of the inner part will be some defence to it; but, notwithstanding that, it is in a place where there is too much probability of accident.

This is a thing that ought to be much more considered in sculpture than it is. The place where the work is to stand should be regarded, that the accidents may be foreseen to which it is liable, and the parts composed accordingly, nothing tender being admitted where there must come violence.

With regard to the materials of which this chimney-piece should be composed, the quantity of sculpture, as in the last, determines that point. There is difficulty in so managing this in any manner, that the merit of the artist may not be lost in the confusion of the objects from their nearness; and if a coloured or variegated marble were employed, that confusion would be inevitable; therefore plain white is fittest for this purpose. Indeed the universal rule suits well with Nature; for as the variegated marbles do not advantageously admit sculpture, neither do they require it; their mixture of tints giving them beauty of another kind.





C H A P. XXXIX.

Of a chimney-piece for a room more enriched.

WE last considered the kind of chimney that would be proper for a room where the mouldings of the wainscot pannels were decorated with sculpture, without any other considerable addition : in this chapter we shall carry our student's imagination a little higher in the same way ; and suppose that, beside the sculpture of the mouldings, the room has farther decoration of the same kind : the chimney must be proportioned to this ; and we shall here consider the form that will be most proper.

The same general shape with the last must be right, because the decorations of the room are of the same kind ; but as there is more required in this case, there must be more extent for the reception of the ornament.

This is the first principle : the chimney-piece must be larger, and there must be a greater field for decoration. The lights and shadows must be next considered ; and, after our young designer shall have drawn his general outline, he must begin to provide for this by different projections.

Three plinths, in different degrees of projection, he must first mark in, as in the preceding ; but in these the third or most remote must shew itself between the first and second very far back, and the middle one or second must itself have a different projection, the middle of it standing much forwarder than the two sides. We shall shew the use of this in the superstructure : but let the student begin here, and he will see the advantage in point of light and shadow, that must attend such a mixed projection of the several parts.

Upon the first of these let him raise on each side a perpendicular piece of its breadth terminated each way by a handsome moulding ; and, laying another piece of the same form and composition over them from one to the other, he will have then the frame, or first work of the chimney.

The second piece, as we have named already, is not to rise close to this : the third, coming behind it in form of a back pilaster fashion, is to separate it a little, and there is then to be raised upon the middle or most projecting part of the bottom, a scabbard of that kind, which holds the figures of the termini ; and from the hinder part of it, which projects less, let him raise a perpendicular piece, which is to serve as a back to the figure in the middle ; and shall be all the way of equal breadth. We have before mentioned the continued piece of smallest projection ; which running

Book VI. behind this, serves as a back to the whole that is raised on the last mentioned plinth, and terminates pedestal-fashion at the height of the first frame of the chimney.

Thus much prepared, the figure which is to rise on the middle part of this second plinth, and is to be the principal ornament of the work, is to be designed.

The back we have proposed for this running of equal breadth up from the whole of this plinth, must cut through the mouldings of the pilaster back, and rise to such a height above them, that a plain piece being laid over the frame by way of freeze, its top shall be level with theirs. These are uniformly to support the cornice of the mantle-piece.

We have directed the student to begin the form of a scabbard from the projecting part of the middle plinth, equal to it in breadth at the base. The outline of this must be formed by two divergent lines, which widening upwards, must a little above the lower moulding of general back unite with those lines which form the particular back of the figure, drawn from the two sides of this plinth.

This will have a very happy effect, as the student will perceive by casting his eye upon the figure in our 95th plate.

Now, directly under the mantle-piece, let there be drawn a female face, crowned with a fancied head-dress, and ornamented with flowing hair. The neck and breast must be naked below this; and they will naturally enough fill the square piece, where the two lines which form the scabbard are lost.

In this place is to begin the scabbard; and a little foliage may very well rise on each side, and in the middle drop lower, forming a kind of ornament above the sides of the breast, and concealing the separation.

Hence is to be continued the scabbard downwards; and this should in the present instance be decorated with a rich festoon for two thirds of its length, and on the lower part covered with an acanthus leaf, raised for that purpose from the surface of the plinth.

Over the head, and upon the flat piece, continued from one of them to the other, is to be carried the cornice; which projecting on each side over the heads, and receding behind, will have a great deal of variety in light and shade; and nothing will now be wanting but the ornaments.

C H A P. XL.

Of the ornaments of this chimney.

IT is intended in the original design of this chimney, that it shall have a great deal of decoration. Those heads we have placed above the scabbards in the middle parts, are a great article of this elegance; and what remains to be done, is to give a proper decoration to the freeze, or flat piece over the frame, and to add the advantage of sculpture to the mouldings.

In the centre of this piece it will be right to place a tablet, as that addition never fails to give a look of finishing.

In the centre of this is to be formed some large and conspicuous ornament. It must not be a head in this chimney-piece, because that would be a repetition of what is already at the sides. A shell will be very proper for the purpose; and as it should be of some kind that spreads considerably without projection, none will be so fit as the scallop. For the construction of this, we shall refer the sculptor to an original much superior to all the models of old Greece: Let him lay before him, as he works, a natural scallop shell; and if he will with due attention follow the work of Nature in the several ribs and furrows which her distinct and accurate hand has marked upon its surface, he will command universal admiration.

This is the everlasting lesson we give the sculptor. Nature is in all these cases ready at hand; and we shall not fear to tell him, that as much praise may be obtained by mimicking a simple shell, as by copying the Belvidere Apollo.

From each side of this shell should be carried a festoon to fill the rest of the tablet; and as nothing can so properly decorate the two spaces of the freeze on the two sides of this tablet, there may be a great deal of merit in so disposing the inner point of each, that altho' it be in reality distinct, it shall seem a continuation each way of the festoon on the tablet.

The remaining ornament of this chimney-piece must depend upon the sculpture of the mouldings; and in this the same care must be taken, as in the preceding instance, that this be varied in so careful a manner, that the several parts tend to set off one another not to confuse the eye that is detained upon them.

The great caution in this respect will be required at the cornice, for in that part the sculpture will be close. The two mouldings we have directed to be given to the three pieces which constitute the inner work or first frame, must be cut into a bold and strong elegance of this kind; and as the separation is considerable, we

Book VI.

shall allow in this what we declared against in the other, that is, some ornament on the piece between. This must be light, and consist of large parts; and by this means it will at once have an aspect of diversity, and will not confuse the sight.

C H A P. XLI.

Of a chimney-piece, and wind-dial.

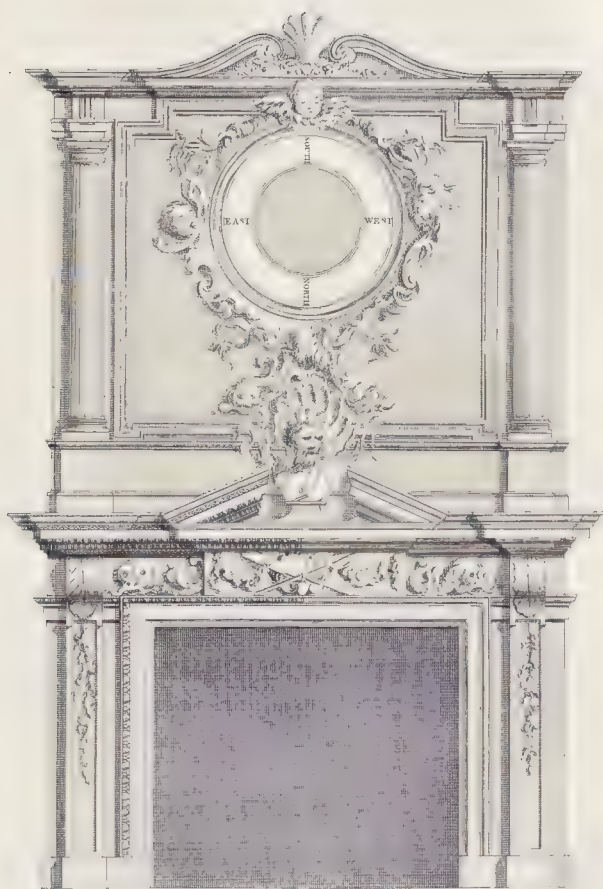
WE shall close the article of chimney-pieces with one of the continued kinds; in which, beside the singularity, there is use.

Every one knows, that from a vane at the top of a house, turning according to the course of the wind, a dial may be made, with its hand, which answering directly to all the motions and changes above, shall point to those divisions on which are marked the several points of the compass.

This is familiar to every one, on the outsides of buildings, from that which is so wrought at Buckingham house; but the most useful method is to place the dial within doors: and we shall give a design, in which it is at the same time ornamental.

Those who are to go out of the house to know the course of the wind, may look at the vane itself; but there is a great deal of convenience in bringing that indication into a room of the house.

When a thing of this kind is proposed, the first business of the designer is to remember, that every room is not fit for it. A wind-dial in a dining-room would be an odd kind of ornament; and much more improper would it be to place it in a more elegant apartment. The study of a sea-officer, or other curious person, or the breakfasting room of a sportsman, are the proper places.



longue et étroite



C H A P. XLII.

Of the construction of this chimney-piece.

COntinued chimney-pieces are in a manner devoted to the finest rooms of a house; and are therefore in great propriety covered with a profusion of ornament: but in this, which is particular in deviating from that rule, the first principle is, to omit the thought of such accumulated decoration.

The room, in either of these cases, is not of that highly enriched kind; nor is the dial itself, tho' it may be rendered far from unpleasing to the eye, a piece of ornament at all like the others, of which we have treated.

For these reasons the design of the lower work in this chimney must be solid, without too much ornament; and all that belongs to the continued part must partake of the same character. Thus much premised, that the student may understand every article, and its reason, as we proceed in the design, we shall consider separately the two parts; or the chimney-piece intended to support this singular superstructure, and the upper work itself.

We have observed in general, that the upper part in a continued chimney-piece should be light; and for that reason have on all common occasions excluded the use of the orders. But this is a kind altogether singular. Its construction will therefore afford an exception from that rule, very allowable in its own nature; and as we have directed that the whole of this upper work should be proportioned to the design, we shall here allow an order in the superstructure, and that not of the lighter kind.

C H A P. XLIII.

Of the lower part in this chimney-piece.

THE student understands that he is to design on this occasion a lower part of a continued chimney-piece, whose character must be strength, and whose ornaments moderate.

It is to be the decoration of a room where the taste of high finishing has not entered; and it is to support a plain, but solid superstructure.

Let him, when he has considered the extent of the room, draw first upon his paper a general outline of the whole; and separating the under part, of which we treat here, from the other, let him begin with the mark of a couple of sides considerably broad in proportion to the height of this lower part. No matter that they have an air of massiness before the upper part is shadowed in; as soon as a Doric column is placed over each, the reason will be evident; and what might seem in the imperfect view an error, will become a beauty.

Let him begin by designing his plinth: let this be continued for the support of the frame and general back, and let it project at an equal distance from the part where the rim of the frame will come, and the verge, that it may support an upright piece, whose projection will give it an air of solidity beyond the rest, and over whose axis is to rest that of the Doric column.

The plinth thus designed, let him begin by raising on its nearer edge two upright pieces for the first frame: let these be narrow, and terminated outward by a thick moulding. This will give an air of strength, more than if they were broader and more flat, and that is the idea carefully to be entertained in the mind thro' this whole design.

On the outside of these must be contained the general back, pilaster-fashion, as we explained on a preceding fashion; and in the midst of this let there be raised, upon the projecting of the plinth, an upright of solid aspect, which is to run up beyond the sides of the frame to the cornice.

These parts laid in, let a plain piece be marked for covering the frame to the height of the tops of these two last mentioned uprights; and thus there will be a level surface, on which to rest the cornice: beyond the uprights there must also be continued a piece over the top of the back, which ended by a moulding running in a line with the upper one of the frame; and thus is the whole body of the chimney-piece

piece framed in this lower part, to the place where it is to be crowned with the
mantle-piece. Book VI.

This is to project over the uprights, that is, under the pedestals of the Doric columns; and a pediment may be raised from its centre. These variations will give it a great advantage; from the disposition of the parts, and the changes of light and shade, and that without the introduction of any improper ornament.

The pediment must be of the open kind, and must receive a bust. Of this we shall speak more at large, when we consider the ornaments; but thus is to be designed the body of the lower part of the chimney, suited to support the rest.

C H A P. XLIV.

Of the ornaments of this chimney-piece.

BESIDE the mouldings, which will very well bear moderate sculpture, there is one conspicuous part that requires ornament. This is the freeze or flat piece over the upper member of the frame: and there will also be room for something on the bodies of the two uprights, which are immediately under the columns. As for the ornaments of the freeze, there is no absolute necessity for a tablet to receive those in the midst; yet it will in general be advantageous. They should consist of large and solid parts, to answer properly to the character of the rest of the chimney-piece; and as we have given two or three different occasions on which it may be proper to introduce this kind of chimney, we shall observe that they ought to be selected out of that part of nature wherewith the proprietor is most concerned.

If the breakfasting-room of a sportsman were the place for the chimney, we should direct guns and nets to be represented on the tablet, and wild game on the sidespaces: but it will be best to suppose it answering the noblest purposes, and placed in the library of a sea-commander. In this case the subjects proper to be introduced are of another kind; and, happily for the sculptor, they are such as will best become his art.

We shall advise in this case, that there be a tablet in the freeze, and that it be larger than ordinary. It will add to the general look of solidity, and will seem a particular support to the pediment raised over the centre of the mantle-piece, and to the bust we have already proposed it should contain.

This tablet will have another advantage in its breadth, which is, that it will contain the more happily those implements which will in the present case best become it. Instead of the gun and nets, in the preceding use of it, let the sculptor here employ his best art to represent the oar and trident. Behind these, where they cross
one

Book V

one another, let him place the large hollow of a scallop shell; and from their upper part let him drop a festoon, which, after drooping toward the bottom of the tablet, on each side, shall be taken up again, and fastened at the upper corner.

These festoons should not be formed of flowers or fruits, as on other occasions; but, keeping up the spirit of the character in all parts, they should be composed of shells and sea-weeds.

There is a vast field here, as in all the instances we have named before on like occasions, for the sculptor to receive as models, but his art, which should depend on Nature, loses sight of her entirely. The heralds animals are not more contemptible than the eggs and anchors of our best sculptors: so remiss are they even in the most common parts: and in all others, tho' Nature is before them, they regard only the representations they find in former works. These are few, imperfect, and obscure; while the variety is endless in Nature herself, and nothing so easy as the imitating her. There is merit in novelty; and this is the natural path to acquire that praise. The artist will find an inexhaustible store for it in these instances; and he will stand very far above all censure, when he can appeal to Nature, and to the representations of her several forms in the writings of those who have professedly studied them.

It is for this reason we so often and so earnestly recommend to the architect, who is to design ornament, and to the sculptor, who is to execute them, the study of Nature. In the present instance, instead of his being reduced to copy what he has seen in the works of others, beside the great variety of shells, there are numerous plants of the sea, and works of insects, usually numbered with them; which afford not only singularity, but a beauty which one would suppose there needs only to know to create a desire of imitating.

Let him trace in marble the wild meanders of the brainstone, and see whether the world will not admire the representation: so much the more, because the subject itself is white, and hard as marble.

If he would task his hand to the highest of its power, let him, as well as art can, mimic Nature, trace in his work the accumulated rays that in distinct assortments cover the star stone. To these let him add, in review at least, the madrepora, or spungy, striated, and starry, white coral; the eschara, whose netted substance tires the eye, while not one fibre loses its place or office: to these the pearly ormus, and the round-headed acetabulum add their various, distinct, and always admired forms. These, and innumerable more, which the sea covers from common eyes, naturalists have dragged up to light; and their forms far exceed all the fanciful figures that modern genius, or even the idolized fancy of antiquity, have ever given us. Nor let the student complain of the difficulty of visiting the shores, and dragging the bottom of seas, for them: this labour has been taken off his hands, and he may view them all upon a single sheet of paper*.

These are the subjects of which the festoons on the tablet in this instance should be formed; and they are ready for a thousand others.

* Hill on Animals.

OF ARCHITECTURE.

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The tablet, which is the principal and most conspicuous part of the lower work, Chap. 45. being thus designed and finished, there remain on each side of it two large vacant spaces: these are the uncovered part of the freeze, and upon these are to be placed some ornament. Let the student remember, that we have told him every thing here must be bold and large. Instead of a composition of small subjects, let him fill each of these side-spaces with a whale or dolphin. The massyness of such a figure will contribute with all the rest to the idea of strength and firmness; and thus will the decoration of the principal part in the lower work be finished.

C H A P. XLV.

Of the decoration for the rest of the lower part.

NEXT after the freeze, and its tablet, come under consideration the two up-rights, which stand under the columns in the superstructure.

Let the top of each be covered with some broad and well-shaped leaf; and let the body be surrounded by a plain moulding. This will give a kind of oblong pannel in the front of each, and down the greatest part of its length may be carried a festoon.

Let the student all this time keep in mind the nature of the subject; and let him design these festoons, not in the common way, but with stars and waves, and pearls and acetabula; and let the leaf he throws upon the top of each be of the sea-kind also.

In consequence of this adherence to Nature, those who are unacquainted with the subjects will yet be charmed with their various forms and aspect, and will perhaps give to his imagination the praise of their invention; but to those who have more knowledge, they will be the source of a nobler pleasure: such will praise the judgment used in their choice, and the truth in the imitation.

All the ornaments of sculpture had this origin; and it is to be lamented that the spirit has so much decayed. It is owing to the sole cause we have named, the poverty of genius, and the tame spirit of imitation.

Those whom our artists affect to follow copied Nature. The first rose introduced sculpture was taken from the bush; and there remains to this time its most perfect model. It is so in all the others; and every carver has power to refer to the originals. Instead of this the forms are transfered with little regularity from one piece of work to another, till, tho' we see in every instance the same shapes, it is not easy to say what they are. The anemomy is in spring open to the imitation of the sculptor; and what comparison can be made between that flower from the garden, and

Book VI. its best representation from the chisel? This copying one another is the reason of the acknowledged decay in the art; and there is but this method we propose to restore it to the first lustre.

The freeze and this part of the chimney being dispatched, the other ornaments are few: A little common sculpture on the mouldings is all there requires on the cornice; and the bust in the pediment should be appropriated to the rest of the work, a Neptune.

C H A P. XLVI.

Of the superstructure.

THUS much finished, we come to the continuation of the chimney-piece upward; and of this the young architect will easily form a proper idea, when he recollects what we have at first said of it, that a wind-dial is to occupy the middle space, and that the sides are to be decorated with Doric columns.

In all continued chimney-pieces the upper work is a kind of frame; and here it requires no particular form. The bust will rise a little way into it; but this, far from being a blemish, will be the happiest way imaginable of connecting the two parts together, and will admit an ornament continued from those of the dial.

To begin with regularity, we shall direct our student to draw first his outline of the whole upper work correspondent to the lower: and this done, he is to design his columns. Tho' it is proper columns should be used in the superstructure of a chimney-piece in this singular case; yet it is to be considered, that when the Doric, the most suited to the general intent is employed, the several methods that tend to lighten it should all be taken. The first of these is the raising it upon a pedestal, because in that case the column having less height in the shaft, requires less diameter; and in appearance nothing will so much contribute to the weight as the thickness of the shaft.

This first principle being established, let the student find the axis or centre of the upright piece on each side, raised for the support of these columns, and there fix the point for the centre of his column.

This ascertained, let him raise the proper pedestal of the Doric order, marking distinctly its base, die, and cap; and let the mouldings which form these be continued as if to unite the two pedestals by an intermediate plain work: they must not be suffered to cut the pediment; and they will be interrupted also by the ornament
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of the bust. Let them however be marked with a faint line all the way, that it Chap. 46z may be rubb'd out where these parts intervene. It is the moulding of the base that will be interrupted by the pediment, and that of the cap by the ornaments of the bust. The first lines being marked in already, these need not cut thro' it; but in the other case the place of their stopping cannot be ascertained till the ornament is formed.

Upon these pedestals raise the two Doric columns; and, to give them a farther air of lightness, as far as that order is capable, let the shafts be fluted. Upon these raise the proper entablature, and crown it with a broken pediment of the arched kind; from the base of whose opening it will be very proper to throw up a scallop-shell; and to give out on each side festoons of corals, shells, and star-stones, to fill the vacancy.

This done, the space is marked in, and little remains for the architect. The structure of the work for the dial is not his province. Its outline is all he is concerned to lay in, for he best knows what should be its size, and what ornaments should surround it.

In the square space contained within the columns, their continued base, and the lower member of their architrave, let him design a proper frame.

This must in general conform to the outline of the space; but, to break in upon the sameness of a perfect square figure, let the corners droop, and the top-line from a small distance each way be elevated a little.

This must be the shape of the frame; and as to its composition, nothing is proper but large, strong mouldings.

Let the dial be now designed, and brought into its proper place. We would not have it fill the centre of the square, for that would be poorly formal. Let it be struck with several concentrick circular strokes, which will form the outlines of the mouldings; and let the outer line of these be so near the top, that the ornaments encompassing it may rise to the bottom of the pediment.

The outline being thus formed, let the four cardinal points be marked, east, west, north, and south; and thus let the ornaments be begun. Opposite to each of these marks let there be a head, representing the antique figures of the winds; and all that is required farther, is to connect these by scrolls of a free, open, and large work.

All is now properly filled, except a square above the bust, left for a peculiar ornament.

Let a couple of dolphins be dropt by the tails from the part of the festoon over this, and let them at some distance surround the bust: within these let the designer form the outline of a large scallop. This will serve as a very elegant as well as pro-

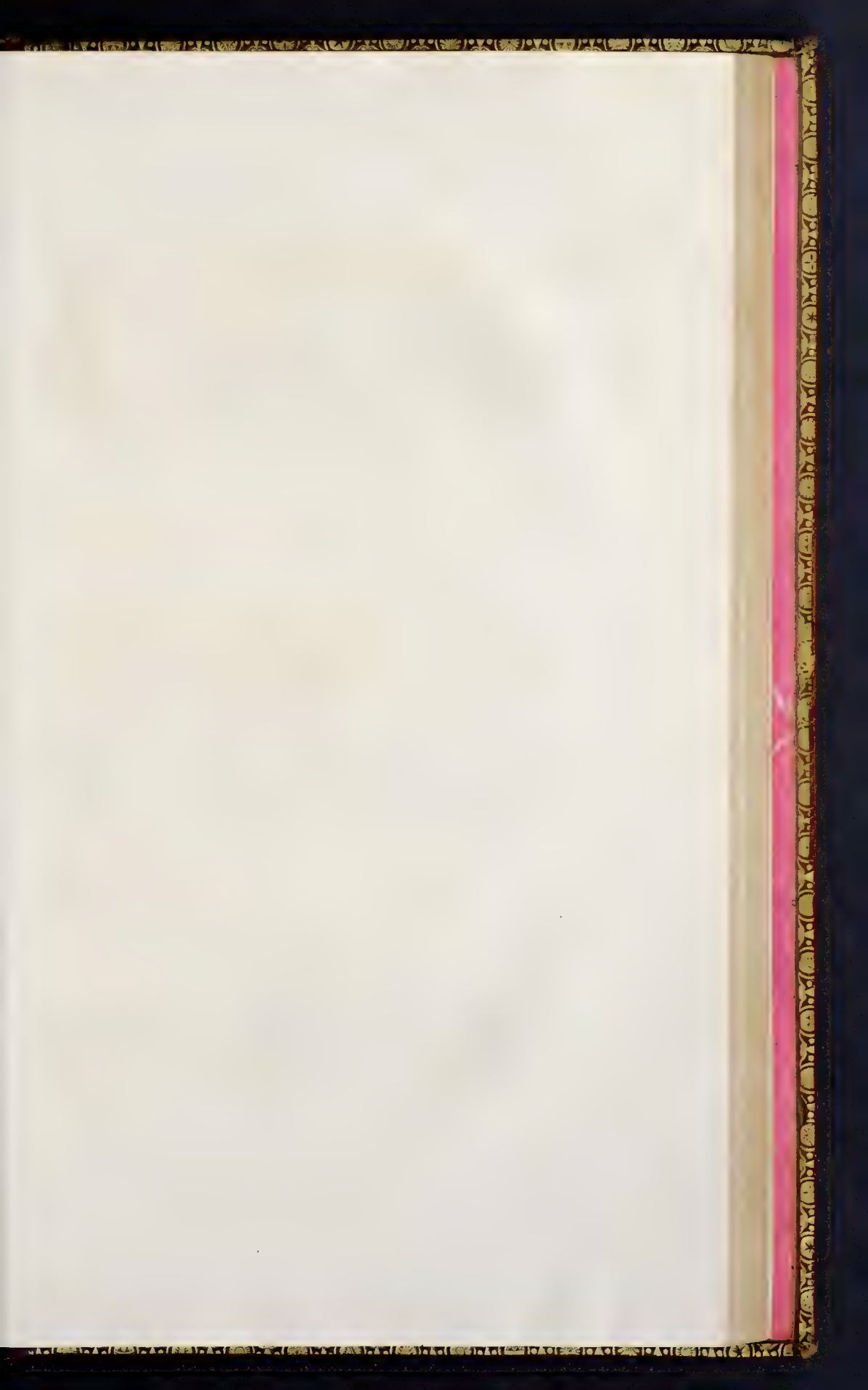
Book VI. per back-ground; and as the upper part will be surrounded by the dolphins, this lower may be decorated on the outside by rising sea-weeds.

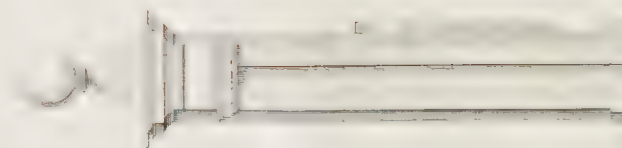
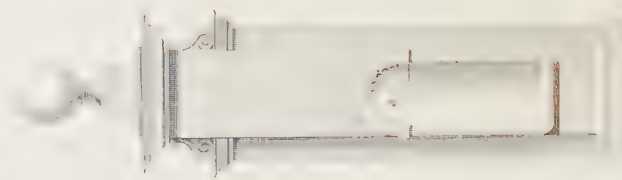
Thus will be finished a continued chimney-piece of a nature suited to the particular occasion; in which every part will be appropriated to the main design, and every ornament will correspond with the intended character.

The End of the Sixth Book.

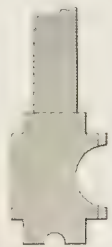


B O O K





*View of large stones at Colchester -
sh. at of his. Unit. & white.*



B O O K VII.

OF EXTERIOR DECORATIONS.

C H A P. I.

Of Piers.

WE have now so far discharged the terms of our plan, that the architect is left untutored in nothing relating to the construction of a house, from its foundation-stone to the finishing, so far as his province is concerned. He is a master of the terms, used in his proper science, he understands the fundamental parts of it, the doctrine of foundations and walls has been explained; the orders we hope are familiar to him; and the division and distribution of his plan has been for various occasions laid down in a plain and useful manner. We hope therefore he knows perfectly what a house should be, according to its different purposes; and it remains that we speak of exterior ornaments and decorations.

These are always proper, and they are often necessary. A house of elegance should have every thing about it elegant; and it is no small advantage to be a little removed from the eye, and from the common walk of men. It can only thus be removed, by taking in a proper area before it. This we have explained and proportioned in several of the preceding instances; and this must be confined within its wall.

In this wall there must be openings, passages of shew, and convenience; and these must be decorated according to their intended use.

Their places we have treated of before: and tho' custom blocks up the front, and has made it a kind of law that these openings shall be two, and at remote parts from the centre, we have ventured to dissent, and have shewn that the best place for the principal gate is in the middle.

Book VII. These openings must have their gates, and the gates their support.

This is the origin of the present article, the pier.

All things in regular architecture are deduced originally from rude Nature. The farmer's gate, which opened into his paled yard, had its posts; and these, in a more ennobled form, make the piers of magnificent edifices.

There must not only be strength, but an appearance of strength in all things; and this would be wanting without the assistance of the pier. We should see the walls rock, or we should suppose they rocked with the motion of the gates, if not supported by a mound or mass. This gave origin to the pier; the addition of a piece of stone-work, or of brick-work, more solid than the rest, to receive the staples of the hinges, to hang the gates secure, to give them room and free power to turn, without appearance of shaking the wall; and thus the first plan of this part was laid.

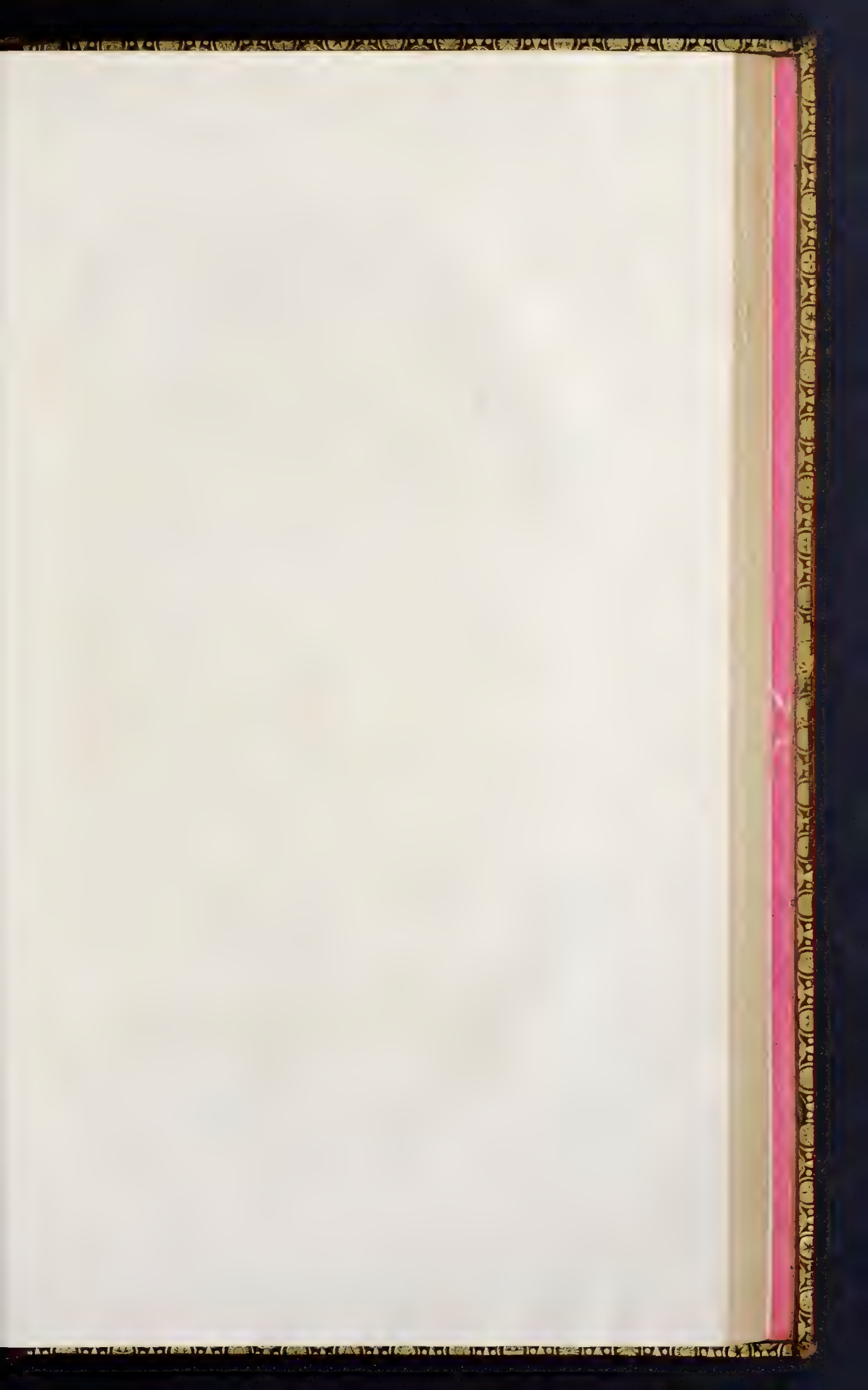
In plainer structures it is no more than a piece of the brick-work, brought out more forward, and made stronger than the rest: from this thought it was natural to improve the part in buildings of more elegance; and it became a regular structure, proportion, solid and graceful, rising above the wall, and variously decorated.

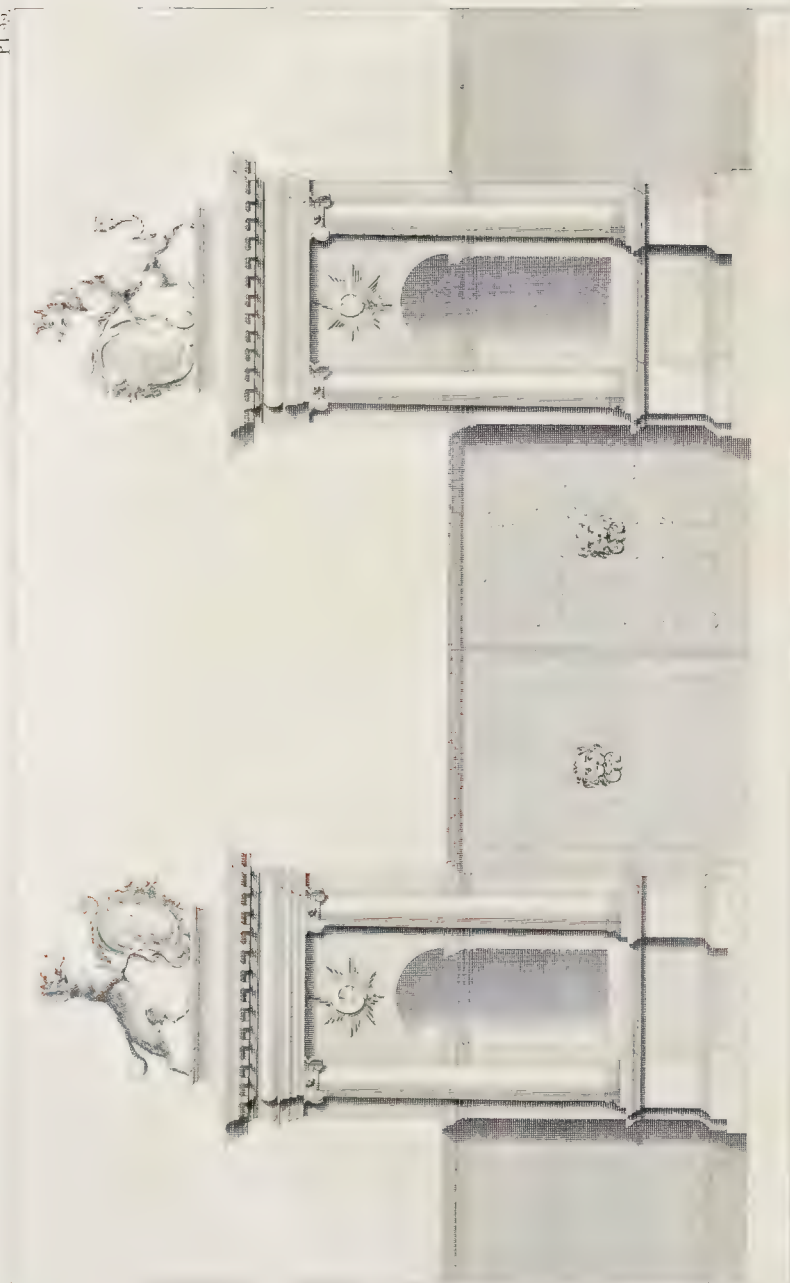
One piece of ornament its use has made almost universal; this is the nich.

Our forefathers, more acquainted than we with the use of their legs, were supposed to knock at one another's doors; and, as they might be tired with the exercise, a nich with its seat were cut constantly in each pier to receive them. At present, tho' our coaches only pass in at these gates, the form remains. Niches are made for shew, even when bars and spikes of iron are placed in them, or before them, to prevent the boasted purpose.

Hospitality was once the character of our country; and these easy, tho' hard seats in the front-walls of every great house, invited the weary traveller to rest, and to take in refreshment and the prospect.

We are in general to observe the practice in building, tho' the purpose is forgot; and are to consider a nich as an essential part of the pier.





C H A P. II.

Of the propriety of piers.

WE would have no part, no appendage, allowed in good architecture, which has not its propriety or use; and it is pity we have so many instances in late and most expensive buildings of that improper method, which sets aside the pier.

The space or area before a house is essential to its standing well; and, when it is a noble building, the piers of the gate are as necessary as the wall which encloses the space. Let the student remember what we have said of columns and their superior beauty, when they stand free and clear of all other parts of a building. It is the same with the whole, with the entire structure. Nothing gives such an air of rudeness and ill management, as to see a building crowded in its plan. The architect who intends to bestow decoration and elegance of form upon a structure, should have it in his thoughts first to let that beauty he designs be seen; and this must be done by giving freedom. If he be left at large in the place, let him proportion the area to the building; if confined, let him proportion the edifice to the space. This gives the first principle of the front-wall and gateway; and as it is essential, introduces with equal necessity the doctrine of piers.

The space, if circumscribed, being marked out, the building must cover a proportionable spot of it, removed from the front-line; and this line must be the place of the wall. To shew the necessity in one vast recent instance, let the judicious eye, nay, let any eye be directed to the mansion-house of the city of London. A hole seems to have been chopped out, by cutting away some houses in the street, and this great monument of dullness to have been raised to fill the gap, not seated there to enrich it; so big, that 'tis an alley only which surrounds it; so high, that, from the ill-proportioned space before, the eye cannot be carried up to view the sculptured upper-works, without half breaking the sinews of the neck in throwing the head backward. Thus stands this large unwieldy mass of matter; where elegance might have displayed itself in all its splendour, and the eyes of bigotted Italy have been taught to admire British architecture.

It is not that the space was too small; none is too small for elegance: 'tis that the building is too big for it. The house might have been thrown far back in this very piece of ground, and the waste room spared within, might have made a fore-court, terminated by its proper distant wall, decorated with piers and gateways; and the apartments, upon such a plan, would have been more compact and more convenient, the expence less, and the structure as delicate as useful.

Book VII. We cannot give a stronger proof of the propriety of gates and piers in front of elegant buildings than this, in which the heavy iron work crowds on the very flights of steps, and the eye akes to look upon the building; while, with due disposition, all might have been compofure and propriety.

Next to this error of bringing forward the building to the street in great towns, is the burying it behind walls too lofty. The entrance is of the contrary kind; but every one knows the fault may be equal in opposite extremes. In the first case the house is thrust too forward upon the observer, and loses all its praise, like objects brought too close before the eye in vision, which, being within its focus, are seen confusedly and with pain: in the other it is hid entirely. Neither is the purpose in building. For what does the proprietor expend his fortune! for what the architect search over the stores of antient time, and tax his labouring genius for invention, but that the structure may be admired? This purpose is prevented when it is hid. Who ever saw the regularity, the symmetry, and beauty, of the London house of that great ornament, as well as patron, of the science, the Lord Burlington? The friends and intimates of that great man; who could not but be few, because his judgment and his taste were delicate, and he lived in an age almost of barbarism. If a stranger pressed for the sight, a porter surlily denied him: and for what purpose was this burying and hiding of an elegant building designed? It is indeed impossible to answer. The wall is disproportioned to the edifice, and throws a melancholy gloom upon it and about it. The height too enormous for piers, the proper ornament; and therefore an expensive gateway, with the orders, and a rich superstructure, was rendered necessary. Let us excuse this great man, while we condemn the practice. The errors were not his. The work was done in his absence, while he was gathering that knowledge, in the more improved parts of Europe, which he shewed afterwards at Chiswick. He disapproved this; but he suffered it to stand, because his own design was in the other place.

The purposes of this wall would have been answered by such as would have admitted the use of piers, and the building would have been seen with them. The dust and inconveniences of a street, the noise of passengers, and the too free gaze of untaught eyes, would be kept off with a common front-wall, and to this what we here treat of is the proper decoration. A house not too large for the space in which it stands, defended from the too close approach of strangers by its front-wall, proportioned so as to become it, not to hide it, and decorated at a front-opening with piers, exhibits perfection in this part of architecture; and this is a most essential part of the great point, disposition. This shews the place, the use, and the necessity, as well as propriety, of piers: a part in architecture less understood than most others, and as ill practised as any.

The wall being proportioned to the height of the house, the gate must have an opening, suited partly to its use, and partly to the extent. The entrance should be free, and it should appear so. The idea of crowding has in it meanness and trouble. Dignity and ease are consulted in the structure, and let them be seen every where. As the gate is intended for a coach, let it be so large in the open-

ing, that this may pass thro' without coming near either side. It has the aspect of a place of business to come in thro' an gap which will just admit the wheels; and there will always be the idea of rubbing and squeezing. These are meanesses that should have no place in the approach to an edifice of taste and grandeur. The opening is therefore necessary to be free and broad; and this will give the first law for the piers. They are to terminate it; they must bear a general proportion to the wall in which they stand, to the edifice to which they lead, and to their service; but the most immediate relation the eye discovers, will be that to the opening of the gate. Should this be disproportioned, all regularity beside were fruitless. A pair of massy piers to a narrow opening would be absurd: they would have the aspect of unnecessary weight and of constraint, and would appear intended for some other use, and brought in here by chance.

As we have directed proportion to be observed in the gate, the wall, and the whole exterior work, it is no where so needful as in these piers. They have the first attention of the eye, and they never fail to fix a kind of character of the whole building. The high-gates, which have been suffered unluckily to swallow up a vast price, and take their place before some elegant buildings, carry the aspect of triumphal arches more than passages to a common house. Their columns raised on pedestals, and crowned with a regular superstructure, bring into our minds those triumphal edifices raised by Rome to the glory of their half-deified heroes. We are reminded of the structures sacred to the names of Constantine, of Severus; and of Antonine, and look in vain for trophies, ornaments, and history. The house seen thro' their opening gate is reduced below its real dignity in the comparison of their ill-adjusted bigness; and the buildings so disproportioned mutually reflect disgrace on one another.

The student will now see the whole theory of piers, respecting their use and appropriation; and we shall lead him to their construction, by a few instances; giving rules for all that can be required of him.

C H A P. III.

Of the construction of piers.

THEY are to be fixed to the wall, therefore they must be proportioned to it; and they are to be seen in one view with the front of the building, therefore their correspondence with that is of equal necessity. The general error is, that they are made too massy; but we shall instruct our student how they may have strength without this appearance of weight.

In houses of the more massy form, a greater fullness may be allowed, nay will be required for the piers before it. In others their height must be suited to their diameters; and there is nothing so commendable as an air of lightness.

They are to be placed upon a plinth, and something must be allowed by way of ornament and finishing at their top.

Their use is to receive the staples of the hinges, and to support the gates; but this is a use to be concealed, at least there must be an addition of ornament to disguise it; and the ornament placed at the top will happily concur in this, because it will give to the eye at least an appearance of the pier being raised to support and carry it.

Piers may be of the more simple or of the more noble kind. We exclude from this consideration the false taste of Gothick, and the contemptible designs of Chinese ornament. The pier we call simple, is that which rises from its plinth with a plain shaft, hollowed for its nich, and crowned with a slight ornament. Under the distinction of more noble, we include those which have the use of columns.

These admit all the luxuriance of fancy in their decoration. The columns are placed naturally on each side the nich, and they support their proper entablature. This forms a broad head, over which may be raised a kind of pedestal to hold the shield, or the supporters of the arms, an antique vase, or some other proper ornament.

In this kind of pier the choice of all the orders is in the hand of the student; and it will be his proper consideration to select that which is best suited to the edifice.

If there be an order employed in the house itself, let it be the universal rule, that this in the piers be the next in degree below it. If the Corinthian is employed in
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the front, let the Ionic support the entablature of this more elegant pier; and so of all the rest: only the two extremes will admit of some variation from the common practice. Chap. 3.

In the strict rule, let the student proceed thus: If there be an order employed in the front, let the piers be of the more noble kind; if there be no order in the exterior part of the edifice, let the piers be simple or plain.

In the construction of them, the middle orders will be most useful; and of those we shall treat first. We have said, if there be Corinthian columns in the front, let there be Ionic in the piers; and as an air of solidity is required in this place, let every thing that could break in upon it be avoided.

It will be proper to raise these columns upon pedestals, because the continued moulding from their cap will be a good decoration under the nich: but, notwithstanding this use of pedestals, let there be nothing of that lightness which accompanies an order thus elevated in a more exalted situation. The base, the shafts of the columns, and every other part standing low, will be in the reach of accidents: therefore let the base of the column be the Attick. The peculiar Ionic base is exceptionable in itself, and is here improper, because too tender and delicate. The Attick may be used for all the orders; and that without impropriety, and under the sanction of antiquity. Let the shaft be raised upon this plain, and its whole grace be its diminution, and let the freeze in the entablature be the rounded or pulvinated kind.

These particularities observed, the rest is left to choice. We have given various constructions of this order; but, for the present purpose, the Palladian is best.

If the Ionic order be used in the front of the building, let the pier be decorated with the Doric. It will not only suit its place as being the next inferior order; but the house being naturally less enriched which has this than that with the Corinthian, the plainness in the pier will be more suited. Let this be raised as the Ionic on a pedestal: let this be the proper pedestal of the order, and let the shaft be plain.

The choice of a base must depend upon the base of the Ionic, in the front: if that have its proper base. Let the Doric column have the Attick; but if the base of the columns in front be Attick, then let this of the Doric be the Roman base, that of the Doric in the Coliseum. We have given its figure, treating of that order.

These will be the most frequent in use in the construction of this part; but we must not let the student be unwarned of the peculiar care proper in the construction of the piers, when the body of the building is decorated with one of the extreme orders: those are the Composite and the Doric, for the Tuscan is excluded this service.

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Book VII. If the Doric be used in the front, according to our rule, if we had laid it down without exception, the Tuscan order should have been employed in the piers. But there is no rule without exception. The Tuscan must be excluded, because too gross and heavy. It would give an air of too much rudeness to a piece of this kind; and, if used to the gateway, it should be in another form, the column serving as a pier, not making a part of one.

Therefore, in this case, as the inferior order is excluded, and a repetition of the same with that in the front of the building would be poor, the architect is in some perplexity. To extricate him, we must remind him that there are properly two Dorics, the antique and more modern. The antique Doric is but a kind of less gross Tuscan, its parts better proportioned, and its diminution more suited to the measures of the other orders. We have given this in treating of the Doric order, and let him use it here.

Let him remember also in this case our everlasting rule, of keeping the whole, and all its parts together in his eye in the construction of every building. When he considers that this house is to have its piers, that they must be Doric as well as those in the front, and that they will be necessarily too like those others, let him lighten those in all respects, that these may be distinguished by their being more plain and massy.

The use of the Composite order in the front of a house throws the student into the greatest perplexity of all. According to our rule, this induces a necessity of using the Corinthian in the piers. Now the Corinthian is an order too delicate and tender for this place; he must therefore consider in what manner he may avoid the natural impropriety.

C H A P. IV.

The manner of using the Corinthian in a pier.

IN using this fine order for a pier, the architect must depart from the laws imposed by custom, and from the common form: instead of two columns, as we have mentioned for the other orders, there must be on the face of the pier only one when this is used, that its parts may be distinct, large, and out of the way of injuries. This will have a singular, but it will also be a very agreeable and very elegant appearance; and as we direct this order to be used for a pier only where the composite is employed in the front of the edifice, there will be a correspondence, not only of parts and forms, but even a uniformity of design seen in the whole.

As nothing is so laboured or full of ornament as a composite front, no pier will be so rich or full of elegance as this, wherein the Corinthian column displays itself in full majesty. Let it not be objected that the aspect will be peculiar, for this is its praise; it is fit, it is necessary that it should be so: the building itself will be peculiar, and different in a high degree from those of common form; and every thing should keep pace with it.

In the construction of the pier this way there can be no nich, for the place of that will be occupied by the pedestal of this lofty column; but this, far from an impropriety, becomes, for the same reason with the rest, perfectly right. The use of the nich was originally as a place of sitting: we have shewn that a compliance alone with custom compels us to use it now, for this form is preserved without the service; and in such an edifice as that whereof we now treat, it may be very well dispensed with.

Where all is great and noble, there is an unbecoming poverty in such a part; and it is better to continue the idea of uninterrupted state and dignity throughout. The possessors of such edifices cannot be supposed now to place themselves in niches at the piers before their doors; and it would not be proper that inferior figures should be disposed there.

From these considerations the student in our science will learn boldly to depart from vulgar rule when reason, the true guide, directs him; and in this case there is the more scope left for his genius, and the less constraint upon his fancy, because the antients have done little in it: he has in no part fewer instances to guide him; and consequently he has few subjects of appeal for those who would find fault.

The antients did all fall into this way of building: instead of single piers, their entrances were by porticoes, or covered gate-ways; and it is in the construction of these that the architect of later time must trace his general rules.

C H A P. V.

Of the construction of a Corinthian pier.

THE propriety of using this order in the outer ornament, where the composite is employed on the face of the building, is deduced from a rule we have laid down in a preceding part of this work, and which the great masters of late time have uniformly observed in their works, though they have not directed it in their writings; that in subordinate plans of decoration, the order to be used is that next in degree to the principal. The same reason infers the manner of using the Corinthian in this place, which is therefore well founded, though singular. It is the intent of the architect that the principal work shall demand the principal attention, The column used in the construction of the front. On this principal part, the expence is laid, the genius, the knowledge of the artist has there displayed itself, and thither he hopes to carry the eye. Therefore, whatever order is employed beside, whether it be in the construction of a window, or whatsoever other partial ornament, that is to be of the next inferior kind: in this way of working the elegance is placed where it should be, and there is yet a connection in the several parts.

Now, upon these just principles, not the less strict because unexplained before, let us consider the construction of a pier for the gate of a house, which has a composite front. We should perhaps, at first, think of the usual way of placing a nich in the front of the pier, and raising on each side a Corinthian column. The objections to this are obvious; the parts would be too small and delicate, and to speak freely, the eye having considered the true beauties of this, might look upon the other afterwards with disgust. Ornament is the great intention in using the composite; and in a small column placed immediately before the eye, in the pier, the beauty and elegance of the Corinthian order would be so conspicuous, that it would eclipse the other: indeed the point is undetermined, which of these two should be accounted the higher order, and it will be so as long as practice directs one thing and reason another. The lightest order is properly to stand uppermost, but the Corinthian is lighter than the composite: it is plain where reason would direct its place. Custom has established another law, the most enriched must be placed uppermost: this sets the composite above the Corinthian; for that, although it have most weight, has also most decoration. We see the point is therefore in itself perplexed; and a nice judgment would perhaps determine against custom, in the choice of place for these two orders: as there is this difficulty, there occurs the greater reason for a careful construction of the parts, and due management

ment of the order for the pier in the present instance. We have shewn the danger; and the true method of avoiding it, is by departing boldly from the common custom, and raising the column single at the pier, that it may be large in all its parts, and have at once an air of grandeur suited to the character of the house, and lead the eye to the superior decorations.

If the architect object that this cuts off a source of beauty, for that over the nich there is a place for ornament; we answer, that it supplies it with a much greater. The diminution of the column is very beautiful in the shaft of this order: it will no way be brought so happily and perfectly before the eye as in this use; and its entablature will form a more elegant finishing than any thing that can be devised.

Let not the young architect be startled at the novelty of what he is advised to undertake in this case: a pier is a part left almost at entire liberty; it is, in reality, no more than a handsome gate-post, enriched according to the dignity of the building to which it belongs. It must be strong; but strength does not exclude the use of the single column. The pier is firm and solid, independent of that part; which, whether single or double, is but a superficial ornament. Custom does not impose a necessity of any column; there may be a pilaster whose breadth receives the nich; there may be a column on each side of the nich in another form, or there may be one: if not customary, it is not for that less justifiable, and there is all the reason in the world for the practice.

Let our student therefore, who has a pier to design for such an edifice as we here consider, first proportion its length, diameter and distance, and when he has laid in his out-line upon paper, let him design a column of the Corinthian measure that will properly stand within those dimensions.

The height, the bigness of the parts, and their distance from the eye, will all assist in preventing disturbance of the imagination, arising from the degree or proper rank of this and the composite columns in the front. And he must finish this consideration by a proper choice for the model of his work.

The common architect knows nothing of the liberty that is here free to genius. Palladio lies open before him: if he remembers what he has there read, he thinks he is a master of the science; and if he has not pride to claim that title, he thinks truth and the measures of Palladio are the same, and that to be perfect is to copy them strictly from the figures of that author into his work.

No general rule is or can be better than Palladio's; but architecture is a science too noble and too free, to be constrained by any single rules. In treating of the Corinthian order we have taught the student many forms and many methods of constructing it; all authorized by examples of the antients in their most great and revered remains; all elegant, and all conformable to reason.

Why

Why does he think these, to whom we owe all that is great in the science, who were too wise to err, and too strict to deviate by accident, employed in different works these various forms? It was to suit the column to the edifice. When that was massy they constructed even the gay Corinthian with a degree of plainness; so excellently could they distinguish; and when it was more light and gaudy, they gave a freer scope to fancy, and wrought the order lighter, while they enriched it more.

They could distinguish between the building that required the Doric, and that which would become the Corinthian in its usual form, many degrees and stages; and they saw as many between that which could properly give place to the Corinthian, and that wherein the full labour of ornament would be proper, which characterized the Composite. This they saw, and to this conformed their practice, varying the model of their order. They had an established rule for the construction of the Corinthian order considered absolutely; but this was rather an idea than a model for working: they never used any order but they considered it relatively to the building; and when that was plain, they reduced the decoration, and even the form of the column to more simplicity; on the other hand, where the building in general was lighter, and designed for more embellishments, they, by as many degrees, raised it above the ideal standard of regularity.

These are the niceties of the science: this is to study architecture. The common practice is but the labour of the hand; this the employment of the mind, and is as much superior as creation (if we may be allowed to adopt that sacred word from nature into science) is above imitation. We have led our student thro' the common forms; and it is time he should ascend to this superior knowledge: the principles of it are laid down where we have treated of the orders; and we may, in these chapters where the figures illustrate without large explanation the common nature of the designs, lead him to them.

In these researches he who has genius will find the true pleasure that attends a knowledge of science; and he will find whatever is said on one subject applicable, with his present fund of knowledge, to many others.

C H A P. VI.

Of working the order.

THE architect who views his science in the light wherein we have just placed it before him, will find, that he has scope for genius in the least things; and that the least will give him opportunities of displaying it: he will, instead of measuring out the lines and figures of Palladio, consider two great points for his rule in the construction; the first, that it be appropriated to the place and use; and the other, that it have a proper correspondence with the order employed on the front of the building.

These two considerations dictate the same conduct; and both prescribe a plain and simple manner. As it is fixed to a pier, an exterior part, and one of the inferior kind, it is fit it should be constructed with little ornament. The danger of confusing the imagination by making it equal in elegance, the composite of the front will also be avoided the same way: the plain and simple method we propose for its construction rejects all those ornaments that can be spared without intrrenching upon the characteristics of the order; and this at once distinguishes it most obviously from the composite, which is crowded with ornaments; and sets it below that order.

Thus, by a proper choice of the manner wherein to construct the Corinthian, the natural perplexity attending the seeing it with the composite is avoided: it plainly is shewn an inferior order; and the same conformation of parts suits it to the place and office.

Therefore let the student, when he has thus far considered his subject, chuse from among the models of antiquity that column of the Corinthian which best suits the purpose; or let him take the plainest we have given in our account of that order. This will answer the purpose; and he will be able to justify from the antique the column he has thus suited to his work.

This is some use of genius, but he may make yet more; he may construct his column upon a plan of his own, not too far removed from the plainer instances in the antique; and thus may perfectly accommodate the conformation to the place, office, and connection. If any should object to this, and call for his authority, let him declare his reasons: let him freely answer that he has no authority: that the column is Corinthian according to all rule, but without any particular model: that the antients have varied in all those degrees and instances we have laid before him; and

Book VII. the moderns who dare judge for themselves may vary also; that they did this to accommodate the order to its place and office, he has done the same; and that, although not authorized by any particular example, he is justified by their general practice. This would be speaking as becomes the professor of an elegant science; and thus might he strike dumb the cavils of vulgar artists. Certain characters there are which belong to each order, and these must be kept inviolable and invariable: it is the business of science to distinguish these from the lighter and less essential additions: to preserve the one sacred, while he plays at pleasure with the other.

We advise therefore, that for an edifice where the composite order is used in the front, the pier have the decoration of a Corinthian column: we direct this to be made in the most plain and simple manner possible; and we should applaud that architect who would shew us one in this use more plain, more simple than the lowest of the antique. He might give us for his reason, that if they had left an instance of this use of the order, they would have made it such; and as their conduct will support this assertion, he would have as much right to follow the rule as if the best of them had left an example.

Nor let him fear his pier should in this case be too plain; he is, with all this simplicity, to observe in every respect the rules of construction in the order; and we shall tell him, that the plainest Corinthian column will be full of elegance.

C H A P. VII.

Of the disposition of the columns

THE situation of the column demands a first consideration, for we propose to raise it from the ground: it will therefore be in the reach and way of injuries, and all care must be used to render it least liable to them.

The first thing dictated by this rule is, that the column have its pedestal, and that this pedestal be proper to the order, but wrought in the plainest manner.

The body of the pier must be of a breadth to swell on each side considerably beyond the extreme line of the cap and base of the pedestal; for that way the form both of this and the column will be most beautifully shewn: and this pedestal must be raised upon a plinth separate from, and independant of all its parts.

The greatest beauty of a column is, that it stand free and disengaged; but this is a use in which there lies a plain exception: if the column here stood perfectly insulate it would appear an ornament placed before the pier, not a part of its structure: therefore the best proportion is that of a three-quarter column.

This will rise very happily in the centre of the pier, and its equal distant sides will shew the diminution: its proper entablature wrought in the plainest way, will have sufficient ornament for the nature of the part; and if it support a plain vase or some like ornament the pier will be compleat; it will have an air of strength and elegance; and it will be appropriated to its office, and connected to the building.

Here there will be required no other ornament; nor can there be any admitted: in other cases there should not be much, the nich may be decorated with some sculpture in its vault in the shell-form; and over it, in the more enriched kinds, may be placed some ornament.

All must be of a piece in these things: the ornament must correspond to the finishing; and the whole should have a connection with the ornament of the front. In the simplest kinds the finishing should be a ball, and the space over the nich plain. This, Inigo Jones has shewn, may have a great deal of elegance, in the design we have given in plate 98.

The next stage may be the placing a tablet over the nich, and crowning with a vase; and for the more enriched kinds, the design in the succeeding

Book VII. plate 99, gives a very good example. The insignia of dignity in the possessor make a very handsome figure; though perhaps, in the eye of strict taste, not without some charge of ostentation; and in one sense more they are less proper; for he who builds does not inhabit a house always for life, nor leave it with his honours to descendants.

This is the objection: otherwise the supporters and escutcheon of the arms make an elegant finishing; and the companion-star exceed any thing for decoration of the plain part over the nich.

The student who composes these two designs, will also find another general lesson. Inigo Jones has shewn an air of lightness, without too much intrenching upon the necessary solidity; and in the other there is strength without cumbrous weight.

C H A P. VIII.

Of the decorations for a garden.

WE have conducted our student through the whole design of an edifice; and in the last section have entered not lightly into those ornaments of the exterior kind, which naturally take their place in front. We are now to consider some in which the architect is not less concerned, whose place is in gardens.

A large house, where there is ground, was never designed, without the thought of a garden at the same time; and as we have on all occasions advised our artist to have the whole of his work in his eye together, we shall remind him here that the compass of the ground should be proportioned to the plan of the building; its arrangement and disposition to the character of the edifice, accompanying it in magnificence or in simplicity; and that the conveniences of repose, or edifices of shew, erected in it, should also agree with the character of the main building.

The first principle is here that there be space to walk, and seats to rest. These must be proportioned also to one another: it would be absurd to terminate a vast walk with a plain bench; nor less ridiculous to erect a pompous temple where there was not the extent of a hundred yards from the building.

We are getting into a better taste than formerly in the English gardens; but a great deal remains yet to be considered: nor let the architect suppose this foreign to his province; himself must design the buildings that are to be scattered about a pompous garden; and none is so proper to be consulted about the disposition of the ground.

Nothing is well that is not suited to its place. The architect is to design the seats Chap. 10.
and buildings in the garden, therefore he must understand it: we will suppose him
consulted; and we shall, in order to establish in his mind just principles for the
buildings, endeavour to give him a general and proper idea of the business.

The original idea of a garden was much more on the principles of truth than the
studied forms which followed: clipped yews and scolloped greens, and figured bor-
ders, true lovers knots, and six-inch meanders were the supposed improvements of
the first taste; and we are now really improving by returning nearer the original taste,
and banishing them.

This first taste was the selecting a good piece of ground that had the varieties of
hill and valley, sun and shade. Its extent was the great recommendation; and if
the proprietor cut here and there a hedge to form, or planted a few trees to termi-
nate his vistas, he thought all was done that nature could effect, and that art could
prompt for her improvement.

These were enclosed fields, not gardens; but here nature, though too much her-
self, was infinitely better than where every step favoured of art, and every tree bled
from the sheers. We now despise these; and have, between the two extremes of
absolute wild nature and precise art, hit upon a very just method: we need only pur-
sue the same principles, and we shall bring it to perfection. What we propose now
in gardens is to collect the beauties of nature; to separate them from those rude
views in which her blemishes are seen, and to bring them nearer to the eye; to
dispose them in the most pleasing order; and create an universal harmony among
them: that every thing may be free, and nothing savage; that the eye may be re-
galed with the collected beauties of the vegetable world, brought together from the
remotest regions, without that formality which was once understood to constitute the
character of a garden: and that the farther views be open to the horizon. Thus
the eye delights itself at its own choice with the charms of the particular object, or
the vast assemblage of the whole: the philosophick mind is detained upon the con-
struction of a flower; while the free fancy of another turn is charmed with hill
and lawn, and slope and precipice; and sees in one great view beyond the limits of
the bounding walls, all those charms that can arise from wood and water, burnt
heaths and waving forests.

Our gardens are thus more regular than those of our ancestors; in effect more
extensive; and throughout agreeable: every thing pleasing is thrown open; every
thing disgusting is shut out, nor do we perceive the art, while we enjoy its effects:
the sunk wall prevents our knowing where the garden terminates; and the very
screen from unpleasing objects seems planted only for its natural beauty.

What had so long ravished in the idea, now appeared in the reality; and the de-
scriptions of poets were faint to the objects thus thrown together. This was the
rise of our true taste for the disposition of gardens; and this the architect, whom it
becomes to distinguish himself on such occasions, should pursue on the subject. It
is beneath him to say this is Chinese, or that Le Notre introduced it in France;

Book VII. thus Brown disposed the ground in such a garden; or there is example for this at Stow: he has the design, and he may be original. Every thing under such a hand will have truth, because every thing will rise from nature. We are to disclose her beauties, not to make any: The servile imitation we so much discourage is the bane of all improvement; it stops the progress of the arts; and represents them as if perfect; whereas there is not one of them, and among them all least this, which will not bear vast improvement. The best gardens we have are not without defects; nor have I seen one yet where there are not many beauties neglected.

In the design of a garden let two things be considered: cheerfulness near at hand, and remote dignity.* The ground, where planted, should have every smiling beauty; where open, the very wildest parts of nature and most terrible will please. The ragged rock or dropping precipice softened by distance delights the eye; and barrenness itself forms a contrast with the luxuriant prospects.

Let the designer take care that he bring into view at once whatsoever is great or fine, or elegant, or admirable in nature; and that he improve it: planting to break, or clearing to let in the more full prospect. The art will shew itself in not only adopting and receiving what is beautiful in nature, but in contriving the several parts with grace: hence rise new beauties; hence the attention is detained on one object till the imagination is struck by a new pleasure from another. In all we do under this intention the freedom of nature must still be in our eye; there is a wildness that exceeds all art; that gives the sweetness to nature, and that must be held sacred. Though we hide it in part, we must never banish it entirely; and the great delicacy will be to give the elegance of art without robbing what we adopt of that sweet simplicity which renders every thing rural pleasing.

C H A P. IX.

Of the great beauties of nature.

IF we would reduce these rules to practice, we must first understand perfectly the subjects they concern: before we set about our improvements of nature let us recollect what are her genuine beauties. The great and simple objects are but three, the shade of woods, the green of leaves, and the course and fall of waters. From these, to which every thing fine in gardening is to be referred, are deduced, according to their various disposition and arrangement, pleasing landscapes, terminations of prospects, and those innumerable singularities in the disposition of things which accident shews in particular places, and which art would try in vain to imitate.

The freedom, ease, and negligence of nature are full of beauty; and it is these we are to preserve: he best comprehends what will embellish a garden who understands the several distinct branches of these, and can bring them, or throw them together without defacing the grace, or deforming the ease of wildness, while he forms the contrast, from which they receive double elegance. These are the beauties which must be the source of the artist's excellence in gardens; and thus he is to improve them.

C H A P. X.

Of buildings adapted to particular occasions.

THE buildings admitted into gardens may be arranged under two general heads; those which are erected as objects in themselves, and those from which prospects and other objects are to be viewed. The first are the principal in their nature and purpose: they require elegance, and the eye expects something in them worthy to detain its attention. The places for these in a good garden are to be variously chosen; on eminences, or in shadowy scenes: to terminate the view as objects, or to surprize the unexpected eye in a recess of contemplation. We have observed that in many places views are to be closed; as where the nature of the ground requires it; or where an unpleasing prospect or object is to be shut out: the seat, building, temple, or whatsoever name or rank its form or bigness give it, is to

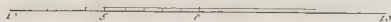
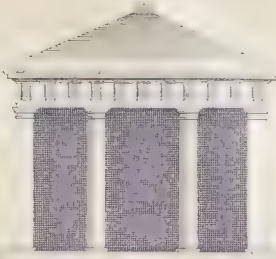
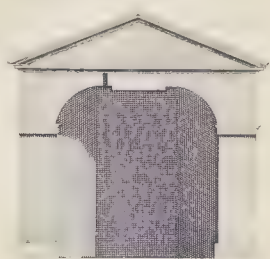
Book VII. be accommodated to all these considerations. Where the sole intent is to admit a prospect, and give repose after walking, the form may be plain and simple, convenient and unornamented. Where it serves at once as a place of repose, and as a point from which to view a prospect; the convenience and the elegance of its form are both to be consulted; and finally, when it serves as an object in some rich part of an extensive garden, it must be larger and more elevated, as well as more decorated. In the two first cases, the building being small, may be always uniform; in this last, it ought in many instances to consist of three regular parts; a centre and two sides.

We have in the annexd plate 101, given three designs in this taste; 1. A simple. 2. A more ornamented, and, 3. A nobler, more elevated, and more expensive.

The first has a moderate extent and depth, its regularity is all its beauty; but it will conveniently give repose to a number of Persons, and defend them from winds; while it is open to the prospect, for the view of which it was erected.

The second answers all these purposes, and is in itself of a more elegant form: it is larger, yet it is more open, and the Doric order which supports it gives an air of dignity and beauty: its depth admits utensils of convenience and pleasure to be brought in occasionally, and it deserves the name of a pavilion.

The third design is one of those which serves very happily to terminate a view and shut out a disagreeable prospect: its height and extent join to answer this purpose; and the variety in its construction detains the eye with pleasure. The Ionic properly takes place in this, as a structure of a superior kind, and its extent renders it useful.





C H A P. XI.

Of various places for seats in gardens.

WE have brought our student into the consideration of these exterior ornaments to noble edifices in a way hitherto unregarded; but the only one by which he can perfectly understand their nature and true form. He who would know where to place his pavilion, seat, or temple, in a garden, must first understand what the purpose of it is, and what the true beauty and excellence of the garden itself. In the same way we shall pursue the subject something farther; and shall be happy if in the introducing our student to the more complicated, or more elegant structures for these services, we throw into the view of the possessor such remarks as may illustrate what good designers attempt at present; wherein their excellencies consist; and how they may be improved.

We have in these instances given the common kinds of buildings for good gardens: below these we need not begin; the carpenter can fix up a bench; nor is it within the province of an architect to direct the construction of a moveable seat. What he undertakes is the pavilion, the temple, the bath, and others of more elegance. The plainest of these is what we see constructed without the orders; and it is a well shaped box, contrived for warmth, and formed with regularity, to stand in the place of ornament: in the other two designs we have given structures with the orders, and having added the plans of all these the student will find no difficulty in executing them.

These are the simpler kinds; and we shall advance from them to such as are of more elegance, or more complicated use: but first we must consider their places in the garden, and therefore the garden itself.

Errors in the original points are never to be remedied: therefore to all who are about to undertake a garden, these must be first avoided: for the rest they are to be accommodated as well as the nature of the place will allow.

When a garden is already made in an ill spot, all that can be done is to open agreeable views by clearing away walls and hedges in the ground; and trees, and sometimes even buildings, when ill-placed, ill-looking and of little value: this is to be done when something pleasing, some view of elegant, wild nature can be let in; and where that cannot be, some pavilion, such as we have described, or shall describe, must shut out unalterable deformity.

Book VII. These are the remedies, such as they are, for a fixed ill situation: but who would not avoid it by a better choice? It is in every man's power; and if the owner omit the thought, the architect who does not remind him of it, disgraces all his succeeding work, entails a certain regret upon the proprietor, and is unpardonable.

C H A P. XII.

Of the choice of ground.

THE plain rule for choice of a place for a garden is that it be seated so as to command views of distant countries, in which are united all the graces of nature: we have enumerated these in a preceding chapter: wood, water, hills, and terminating points. The spot of ground that does not give from some part or other an opportunity for every one of these to be brought into the view is so far imperfect.

Some elevation is required for this purpose; for it is not probable that all these things can come in sight from a flat: if the elevation be irregular so much the better: art will be called in to assist this wildness; and it will have all the appearance of free nature from that circumstance.

The elevation should not be too great: for it will be difficult of ascent; and gardens are intended for walks of pleasure, not fatigue. The perfect flat, even in this consideration, is disagreeable; it cheats the eye, and wearies us at once with the way and with the sameness of the aspect.

Our forefathers had their reasons for a practice contrary to what we direct, but they were weak and insufficient: they generally placed their houses, and consequently their gardens, in flats and hollows, that they might be warm, and that they might have water.

The latter is an article of great consequence in gardens; but sometimes nature affords it in better situations; and art always may. As to the bleakness of an elevated situation, let it be remembered we declare against a very high one; and in such moderate elevations as we propose for the choice it is easy to plant out all that inconvenience.

Therefore let the spot chosen for a garden be one from whence there may be an extensive view several ways; and one where that view is pleasing. England is indeed so much a garden throughout, that it would not be easy to find a place that had extensive prospects, and not fine ones; but even where all is beautiful, there are degrees of excellence, and the choice should fall where there is most cheerfulness,

fulness, and most of that rural simplicity which is the true taste of views from a garden. Chap. 12.

Let not a disagreeable object in some particular place be an objection: that is easily shut out. Where there is compass, variety, and the proper kinds of objects, there can be no defect but in the genius of the disposer.

If any think these cautions unnecessary, let them walk into the most celebrated gardens, they will find an ill choice of the place has denied half of them the easy beauties of situation. Though in imagination it would seem hard to find in England spots that had nothing pleasing about them, yet in practice men have shewn it easy: the citizen shuts out the advantages of nature by a ten-foot wall, and is happy that he can climb to his two pair of stairs summerhouse to view those prospects he has at so much expence blocked out from his easier walks: the man of fashion and expence fixes on spots where there are none, nay those who chuse for majesty.

If any one would have an instance, let him look at Kensington, a vast expanse of garden, formed with prodigious labour, but without all taste; and supported at an expence that would pay for every species of elegance, without pretence to any. Impracticable walks, blind thickets, true lovers knots of box and holly, clipped yews, high walls, and a wet-banked river. Was all this needful? No part of it. We need but walk ten paces from the gate to command the Surry hills one way, and from a thousand places in the garden the elegant country between Acton and Harrow is full in natural view, and has but been industriously shut out by tenfold hedges, walls, and mouldy groves.

Who does not admire the view from Holland-house? Who would conceive that a great part of what delights and ravishes there, is, or would easily be brought in view from the gardens of Kensington.

The judgment the present proprietor of that venerable building * has disclosed in his improvements, shews in a tenfold light the miserable mismanagement of Kensington. There is no naming this disgrace to the national taste without accusing one who now holds an exalted popularity: it has been offered to him to give these gardens all their natural excellence, all those graces and delicacies of art, lost in the appearance of nature, with no additional expence: to make them a more pleasing seat for their present great possessor, and, in his absence, an honour to the nation. But no ministerial purpose could be answered; no enemy destroyed; no cousin pensioned by the scheme; and who in power consults the satisfaction of his king?

The first choice in these gardens was not happy; for Hidepark, close in their neighbourhood, has elevation, variety, command of prospect, sufficient water without wet banks; and the means of two cascades, superior to any thing in this part of the kingdom.

We give this not for the sake of censuring those who chose the spot, and who designed the gardens, but to illustrate what we have been directing by a familiar and an

* The honourable Mr. Fox.

Book VII. obvious instance. The kingdom does not afford a greater either way: the student in the art of planing gardens, can no where see the differences of situation more strongly than in what these gardens are, and what they so easily might have been; nor is it possible to produce an example where, in a garden already formed, so much improvement may be made; or so easily.

The choice of ground therefore is to fall upon a spot agreeable in itself, and commanding views where nature shews herself in all her wildness of luxuriant growth, in all her smiling graces; imbellished with landscapes, varied with wood and water, and profuse in all those rural elegancies which compose the mind, and settle it for contemplation. The repose of mind, content of heart, and quietness of soul we seek when we retire from bustle and from noise; the sweet moments of uninterrupted meditation, are not to be found in gloomy walks, or figured yew-trees: nature is the source of all, and it is in her we are to seek that unutterable pleasure. It is not in England alone that we may see this folly of rejecting them. Versailles affords it even more strongly, the neighbourhood there is full of agreeable spots; and they have sought in woods and bogs the place for a royal garden; where, in the true spirit of that nation, they value themselves upon having done every thing in spite of nature. We shall tell them what a very elegant and judicious writer of their own nation has told them before, that all the expence and labour have been ill employed; and the idea they give is of high dressed deformity. It is not without justice those gardens have been called the wonder of the world; but the French mistake the sense of that expression, the astonishment of the stranger is, that so vast a profusion of expence has been so ill applied, that the greatest artists in the world have been employed to cover with their works a place which always must be disagreeable: there is every thing great, but nothing agreeable. This light people seem to have forgot that the pleasant, the cheerful, the agreeable are the characters of a garden; that greatness belongs to other subjects.

We spare to name an instance not unlike this of a garden in our own country, once belonging to a house which now no longer exists; which, though built with the expence and spirit of a sovereign, never knew any inhabitant but its first proprietor. There, as in the royal gardens at Versailles, if vast expence and astonishing pieces of decoration could charm, they all appeared before the eye: but all the time the outrageous dress buried and hid from all view the beauties of nature: the soil, incapable of producing vegetables itself, cracked and swallowed up the better mould laid in; and one of the most pleasant countries in the world was shut out with stone and iron, with gates and walls and obelisks.

The stranger expressed his amazement and disgust in the same breath; and the proprietor, however unwilling to condemn himself by owning it, saw every thing was fine, but nothing proper.

C H A P. XII.

Of the disposition of ground.

A Piece of ground chosen as we have directed, and designed in conformity to the rules we have laid down, will have place for many buildings, seats, pavilions, baths, and temples: we shall consider in the succeeding chapter what are the proper kinds; but having given the choice of a spot, we must first consider its general disposition; for on that will depend the places of these embellishments.

Our fathers laid all out in strait lines; their walks ran geometrically forward, and the trees which formed the hedges their boundaries were cut to an exact straitness, lest they should give any idea of that freedom wherein we find all beauty. The raw edges of clipped leaves presented themselves to the eye in a near view; and he was the best gardener who could make his trees most exactly represent a brick wall.

Parterres were struck out into fancied forms, and crowded with yews cut into pyramids or cork-screws, and terminated with fans and peacocks. All this is over; we repeat it not to caution men against it, for none are now absurd enough to need such instruction, but to remind the reader of the principles on which the present improvement has been formed; that he may continue them in every part, and improve farther.

A meadow and its hedge excelled all the beauty of our former gardens; because the parterre there afforded only the ill fruits of labour, and the hedge lost the very vegetable character. In the wild state of nature all is free, all therefore is cheerful, and all pleasing. This we are to imitate; and in this indeed the Chinese, whom we follow as we do the French in follies, may set us glorious examples. While we imitate their bells and lathwork lattices; while every carpenter is employed to erect the painted pavilion in their manner, and Greece and Rome are, in the vulgar taste, despised for what is called Chinese architecture, we do not observe the boldness of their genius, or the happy extravagance of their fancy in the disposition of their gardens; as much superior to ours, as different from it. Instead of the precise regularity we have so lately and so difficultly banished, in those vast gardens that have been described to us so happily, there scarce appears a strait line. The profusion of flowers with which they are embellished are stuck in natural hedges or raised on irregular hills, mimicking savage nature, only in a state of more variety.

Symmetry and precision banish entirely the freedom of accidental growth, to which all we admire owes its smiling simplicity. The Chinese method, extremely worthy to be introduced among us, gives every thing, though laboured, the air of native beauty; they value themselves upon breaking in on symmetry and order; and, by the wild-

Book VII. nefs of their fancy, difpofe their tufts of thickets in fo whimfical a manner, that nature feems outdone in her own freedom: their falls of water, though elaborate and expenfive works, feem lucky chances in the hand of nature. She alone feems to have crowned their groves with temples, and to have carried their pavilions up among the clouds.

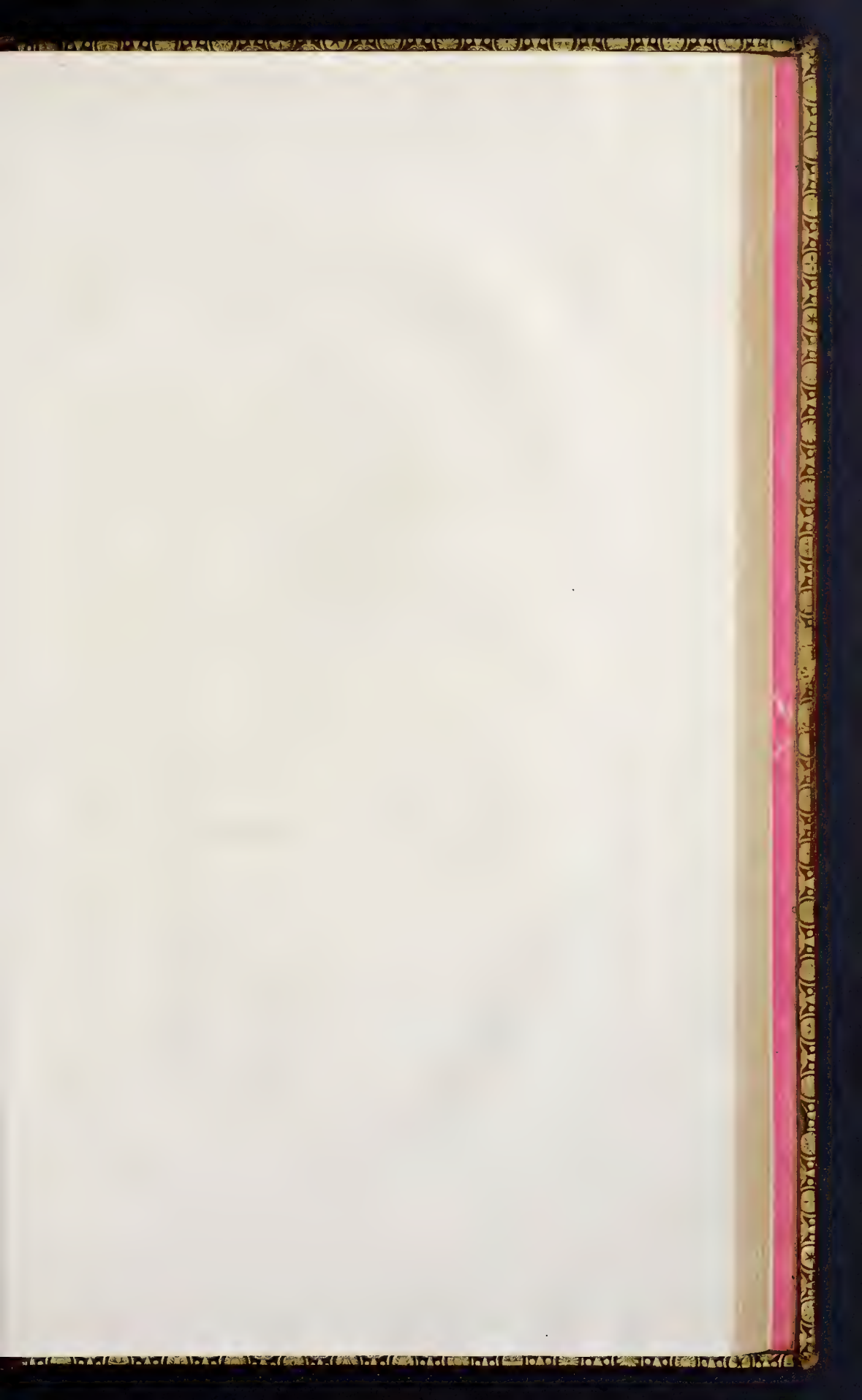
We read the accounts of them with a peculiar pleafure; and wifh to tread in our own richer and more pleafant country thofe fairy rounds and walks of fylvan deities. All appears at the firft thought enchantment; we recollect the caftles and the forefts wherein knight-errants of old time were bred by their magicians; but when we examine the accounts more coolly, there is nothing extravagant, improbable, or impracticable: nature is carried up into extreams, but it is in her own way, by fteps we fee her every day purfue in her free fcenes; and as there is nothing but what we may readily comprehend, fo is there no part that we may not imitate.

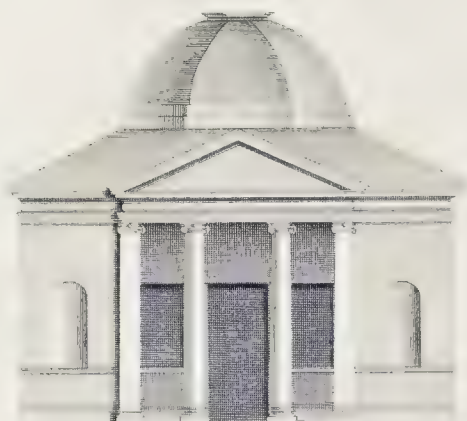
The materials are in our hands, and the work is eafy. Our country is as much above that of the Chinefe in its natural afpect, as the genius of our people: we have been mifled, but when once fet right there is no difficulty in excelling them.

A rural wildnefs and open fimplicity are confulted there; and who denies us the fame advantages here? Their tafte is too extravagant; and that our fober judgments may correct; we have a great deal of knowledge which they wholly want, and there feems nothing needful to compleat the difpofition of gardens but to adopt their reverence for nature with our own excellence in art: to make their wildnefs hide our regularity; and to comprehend as fully their intent and defign in the whole works, as we are ready to adopt their leffer parts.

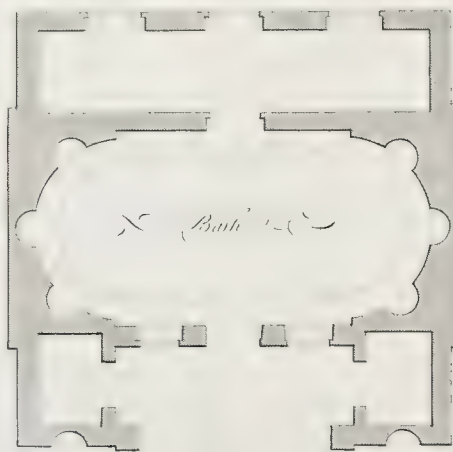
In fuch a fpot as we have named before, the gardens of Holland-houfe, what is there wanting to the fineft fcenes of thofe admired difpofitions of the Eaft? Nothing in nature; and fo much is done already, and that fo juftly, that art needs be employed but a little farther. There is extent, profpect, and variety; hill and lawn, flope and precipice, wood well grown, and variety of foil. We need not tell the poffeffor of this happy fpot (for none knows it better) that the vegetable beauties of the Eaft may be raifed here to cloath the eaftern difpofition of the ground; to the reader in general we may add, that many of the admired flowers of that gay country will bear the expofure of our climate; and that if he would know with certainty of fuccefs how to raife and manage them, he is to feek it in the modern Eden.

* Compleat Body of Gardening, now publifhing in weekly numbers.





0 10 feet



C H A P. XIII.

Of buildings proper for such a garden.

WE have led our student to the idea of a great and elegant garden; and we shall shew him with what buildings it should be enriched.

Let him remember these must not be crowded upon one another. Too many take away that idea of nature we have so strongly laboured to inculcate, and so earnestly desired should be preserved.

As they must not be too numerous, neither must they be all erected in conspicuous places: their nature and their proper offices are various; and they will become different parts of the garden. Full in the sight may be disposed an edifice which terminates a view by design, or hides some distastful object. This should be large without weight, noble without gaudiness, and elegant in its simplicity. Such a building we have designed in our 103d plate; and having annexed the plan of it, the student cannot be perplexed in reducing it to practice.

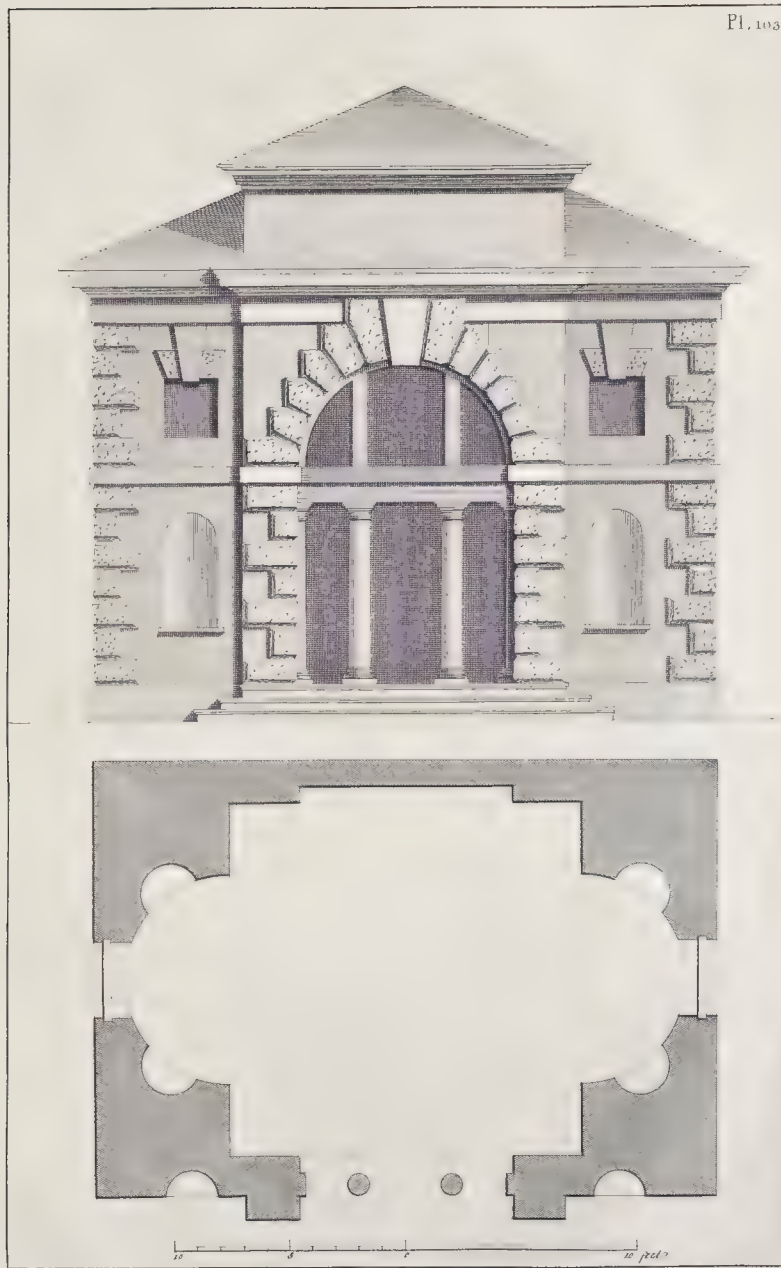
In some retired part of the garden there may burst at once upon the eye a temple with its dome, plain, elegant, and proportioned: such we have given in plate 102. Its depth will give room for useful purposes, and in the centre may be a noble bath. The building will allow a hall before it; and a recess behind for dressing and undressing. We have given the plan of the building, by which a convenient compartition of the space may be laid out; and the utility of this structure will be a consideration not less than its beauty.

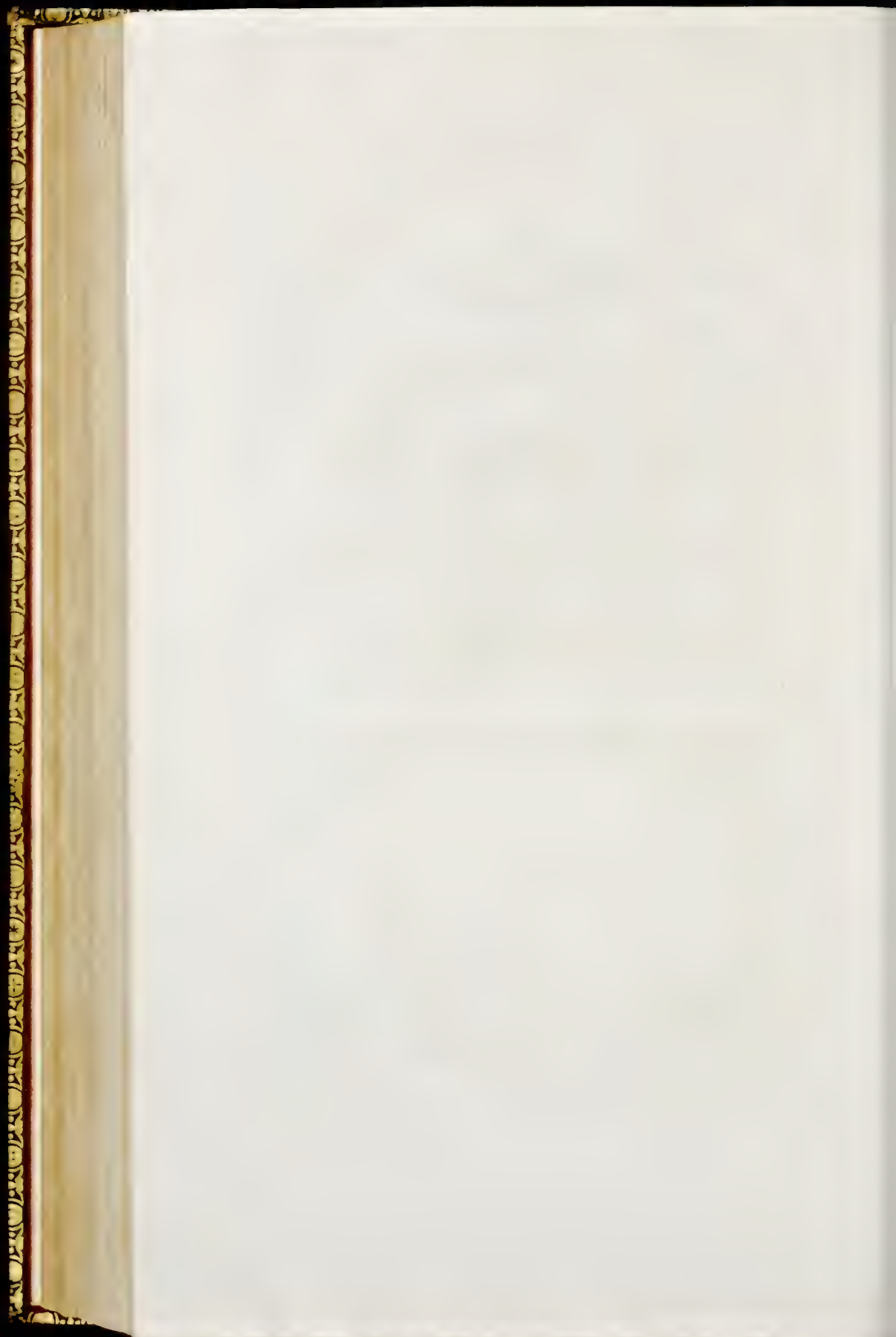
In the construction of either of these the same taste must prevail; and this two words deliver, elegance and simplicity. A flutter of ornaments would be absurd and detestable; and the want of proportion would be as displeasing and unpardonable.

The building most exposed to shew may very naturally and very well bear the addition of an irregular rustick at the corners, and at the principal part in front; but in the other there need be nothing of this variation of work; and a pure and perfect simplicity will perfectly become it.

Book VII. The order we have allowed it is the Ionic; and as the columns are so few this will be no great expence; for the rest, the perfect way of raising it will be with plain and simple walls cased with smooth stone.

This construction will give an air of cleanness and solidity: the water in the bath will be preserved more cool; and whether in its new and unfulled beauty, or stained with mossy green and various tincts of meer antiquity, it will become the place with equal splendour.





C H A P. XIV.

Of other pavilions.

THE designs we gave in the preceding plates are of a limited nature, destined to particular parts and purposes: we have two of a different kind and composition to lay yet before the reader; and that he may perfectly understand their place and office, we shall consider a little farther the idea of those parts of a garden in which they may be most judiciously placed.

Extent and freedom we have directed largely. He who builds high walls about a small garden must climb to his summer-house: this we have named with due contempt; and those are not the gardens of which we speak, or in which such buildings, as we are about to describe, have place.

This closeness of a garden is one of the first things against which a person of any degree of taste will resolve; and it is requisite in the highest degree to be guarded against in the present occasion: one would think nature herself declared the absurdity; and it would scarce be too gross to say the idea of a garden and of these walls are a contradiction when united.

One great design in a garden is to walk and breathe freely; this depends upon the openness of the place: a garden enclosed by four high walls is but a great room open at the top: the first purpose of the design is perverted in the execution.

As the garden must for this reason be open, so, to give any idea of nature, it must have that freedom of which we have spoken. This recreates the mind; this creates diversity: an eternal sameness is unpardonable. We may refer to Kensington for every thing that is amiss in gardening. In the present instance, what are those broad walks lengthwise and across, edged with strait plantations of trees, and covered with a damp turf, but so many long, tedious, and disagreeable streets, worse to walk, and without the variety of objects: many of them terminated by hedges; and all without prospect sideways. This is not the idea we entertain of a garden: at least not what we should entertain: variety is the first principle, and openness the next. The difference between these walks and what we so much admire in the Chinese is extream: the most improved of our European gardens seem to have hit the medium; or nearly. To carry into our best gardens more of this wildness seems the great rule to render them yet more pleasing.

The disposition of groves is a consideration not enough regarded: we err in it greatly; we plant the trees too close, and we make the walks too narrow. The person who goes into them to be free from the sun is choaked for want of air; and

Book VII. the same closeness occasions a continual damp, very dangerous at such seasons. Every thing in them is gloomy and disagreeable. Instead of this, a kind of cheerfulness may be diffused even there; and we may have solitude, shade, and retirement, without a savage darkness or dreary wet.

In these parts let the intelligent gardener consider both the outer aspect and the inner disposition. We are too formal in the plantations; let us remember how it is in nature: irregularity is there the beauty; and it must be consulted here by intermingling trees of different growth.

Thus there will be an object from some other part of the garden, or from several; and if the plantation be made with due care, there will be always variety. The decay of autumn comes on gradually, and the leaves change colour before they fall; some become brown, some yellow, and some red; while others change, their green only to paleness. These, well known, and well intermixed, will paint the clump, as seen from without, and every eye will be surprised and charmed: it will be beauty, and it will be nature.

So much considered for the outer part; let the walks be designed within. The form prescribed by reason, as well as custom, is the serpentine; but though the thought be just, we see it sadly executed. The paths are curled and twisted, and they are narrow: it is hence they are disagreeable, damp, and dark. On the contrary, let them have a considerable breadth, and we shall see to walk in them with pleasure: the trees will not close so at their top as to shut out air, though they give a sufficient shade from the sun; and we shall have at the same time freedom, ease, and elegance: let the serpentine have few, and those slight turns; and here and there let an old tree with all its natural ruggedness of bark break in upon the uniformity, and obstruct the walk.

Let the plantation be made of selected trees, as we have proposed, and let them have good distance: they will grow more vigorously, and the walk will be more wholesome.

This space of planting will also give room for flowering shrubs, which may be scattered here and there about the walk, and will thrive nearly as well as in the open air.

Thus may the groves be constructed ornamentally to the other parts of the garden, elegant and pleasing in themselves, and fit to form recesses in which to place statues, temples, and other structures.

The eye will here be able to view perfect unconstrained nature; and she will have sufficient vigour to display all her charms. This will result both ways from the same cause, the openness or distance of the plantation: the growth of every tree is left free and disengaged, it spreads as nature sends forth its wide branches; these are all clothed with healthy leaves, and as they play about with every gust of wind, scatter the trembling shade; and dancing in the air, admit its free course to the walks, and to the whole plantation. Even straitness in a path of this kind is not always unpleasing. Where the ground favours, the opening presents an amazing prospect: the air and sky make a kind of sea; and the country only appears as the eye approaches nearer the end of the avenue.

In the outer aspect of these plantations they can only appear as clumps of trees; Chap. 15. and in these there is a wildness we have directed our gardener to improve. The natural melancholy air they would assume is rendered cheerful by the variety of colouring; which well chosen trees have in their perfection as well as their decay; and hence advantage is taken of what appears to less considerate minds, the imperfection of nature.

In all the arts there is a use of many particulars which are in themselves harsh but well blended with the rest, create pleasure. Discords in music, and the shades in painting have their place and use: they are not in themselves beauties or graces, but the due mixture of them produces the noblest and the finest parts. All light, or all concord would be glare and sameness: it is by the artificial mixture of these discordant parts that we raise strength, life, and harmony.

A ragged outside of a grove contrasts the trim cheerfulness of an even walk; and one gives the other lustre. The only rule is, that they be used with moderation and discretion; for they must be considered as foils and extravagancies, not as the essential and regular part of a garden.

C H A P. XV.

Of the disposition of flower-beds.

THERE is nothing in which the late taste of gardening so much required improvement as the disposition of flower-beds. The vulgar think a piece of ground stuck full of plants is a garden; they have no other idea of what is meant by the word; but it is much otherwise with those of a more elevated taste; they know that the extensive scenes, of which we have been speaking, constitute what is properly a garden; but they do not deny clusters of flowers a place.

The disposition of these was once in figured borders, cut into flowers de-luce and true love knots, with hearts and flames, and wheels and hour-glasses. This banished a taste, if less quaint, yet as precise succeeded, the planting them in even, regular, and strait borders, set by the sides of gravel-walks, and edged with box, in manner of a low wall. This has a poorness, and is unlike nature.

Let us lead such as still prefer it to more free dispositions, into a May meadow, full of the common weedy flowers of that healthy season, and terminated by a hawthorn hedge in bloom. There is no rational creature so absurd or ignorant, as not to give the preference to nature. Let us take in the meadow and the hedge to some less frequented part of the garden, that they may be admired at their due season; and let us learn from this profusion of cheerful beauty to imitate nature in the rest.

Gravel

Gravel fatigues and scorches on the eye; and new cut box has all the awkwardness of the clipped yew, long banished. We see in nature, grass is the best foil to flowers: its green blends happily with their leaves, and there is not the violent contrast between its colour and that of their coloured tops, which hurts the delicate eye in gravel. We cannot plant them in the grass ground, as nature does the wild flowers of the meadow, because that must be mowed for constant walking; but it is easy to design small spaces enriched with every ingredient that favours vegetation, and in these to plant the flowers of other regions. They may be brought so near the edge as to seem rising from the grass; and there will be all the happy effect of nature improved by more elegant species.

These, being thus placed, will appear as flower-pots, or large nosegays rising out of the ground in their happy form; and the gardener who understands that branch of his profession which treats of the raising of these plants, will know how to diversify the scene from month to month, and give at once a succession for the whole flowery part of the year.

These plants are conspicuous in many kinds before they flower; and in these, as in the disposition of shrubs, there is a great deal of room for beauty and variety.

It is not enough attended to, but the variations of those greens, which at present disgust the eye, as they are placed at random, might be so managed as to form a picturesque appearance. The gardener should be so much of a painter as to know the effect of different shades: and upon that knowledge he may lay the foundation of great beauty. Reason cannot but dictate this necessity; for colours have their concord and discord, their harmony and disagreement, as well as sounds; and there is not even a possibility that they should look well when thrown promiscuously together. We might as reasonably expect words shuffled in a bag and poured out together should make a book of learning; or that the keys of an organ struck by a child should produce harmony. Let the colours of the plants be considered when they are put into the ground, and so placed that there may rise from the joint view, beauty and variety, without glare or dissonance.

In most of our plantations we see the greens ill chosen; and in them all ill disposed. On the contrary, where the leaves were considered as well as the flowers, there would be a pleasing softness in the gradation from one to another; and if the same art were continued to the flowers themselves, they would be a perfect picture. Every thing that is pleasing in nature would be thus brought together and united; and art would improve them all by the disposition.

In these, as well as in the thickets of shrubs, groves, and wildernesses, diversity should be considered: nothing is so tedious as a dull uniformity, and this is the result as much when a variety of trees all of one or nearly of one green are employed, as when one kind tires the eye with the repetition. In our purposed method of arrangement the dark would stand as shades; the pale as lights, and all would re-

semble a good picture. The mixture of these, when care and judgment have united Chap. 16
in it, always surprize and please.

In these plantations, whether of flowers or shrubs, in groves or lawns, are to stand occasionally those edifices of which we particularly treat in this place. They will acquire a double beauty, when not only their situation is well chosen, but the eye comes upon them satisfied with every thing that it has seen before, in passing to them.

C H A P. XVI.


Of water.

WE have omitted to this place the consideration of the water properly to be introduced into gardens, that we might treat of it without interruption. This is an essential article, though many have contrived to make gardens either without it wholly, or with but a poor supply. They have been wrong: because they denied themselves one of the greatest benefits of nature, and one of the first decorations to the garden. The situation we propose will not admit a quantity of stagnant water, nor could any one desire that; but there will be with good choice a quantity sufficient for the purposes of pleasure and service.

Coolness is one of the great articles for which we value a garden, and this we can never so well have, even in idea, as by means of water. The whole ground will be refreshed by it, even to distances, that it could not be so well supposed to affect; and the groves will all be fresher and more pleasant.

In our proposed plan it is probable something may be done by way of fall, and if this be ever so little, it will be still agreeable. The murmur of water on the slightest decline of ground is pleasing, and the more that descent, the nearer it approaches to the fiercer beauties of the cascade. The pleasing noise that water interrupted in its course makes, always composes the mind, fills it with the ideas of those poetical descriptions we have read, and places us in the scene with fancied nymphs and deities of the rural kind, as from immemorial time these writers have described them: it gives that cast of sedate and composed thought which makes a natural part, and a very considerable one, of all rural enjoyment, and by the various disposition always adds a new beauty to places where it is wanted.

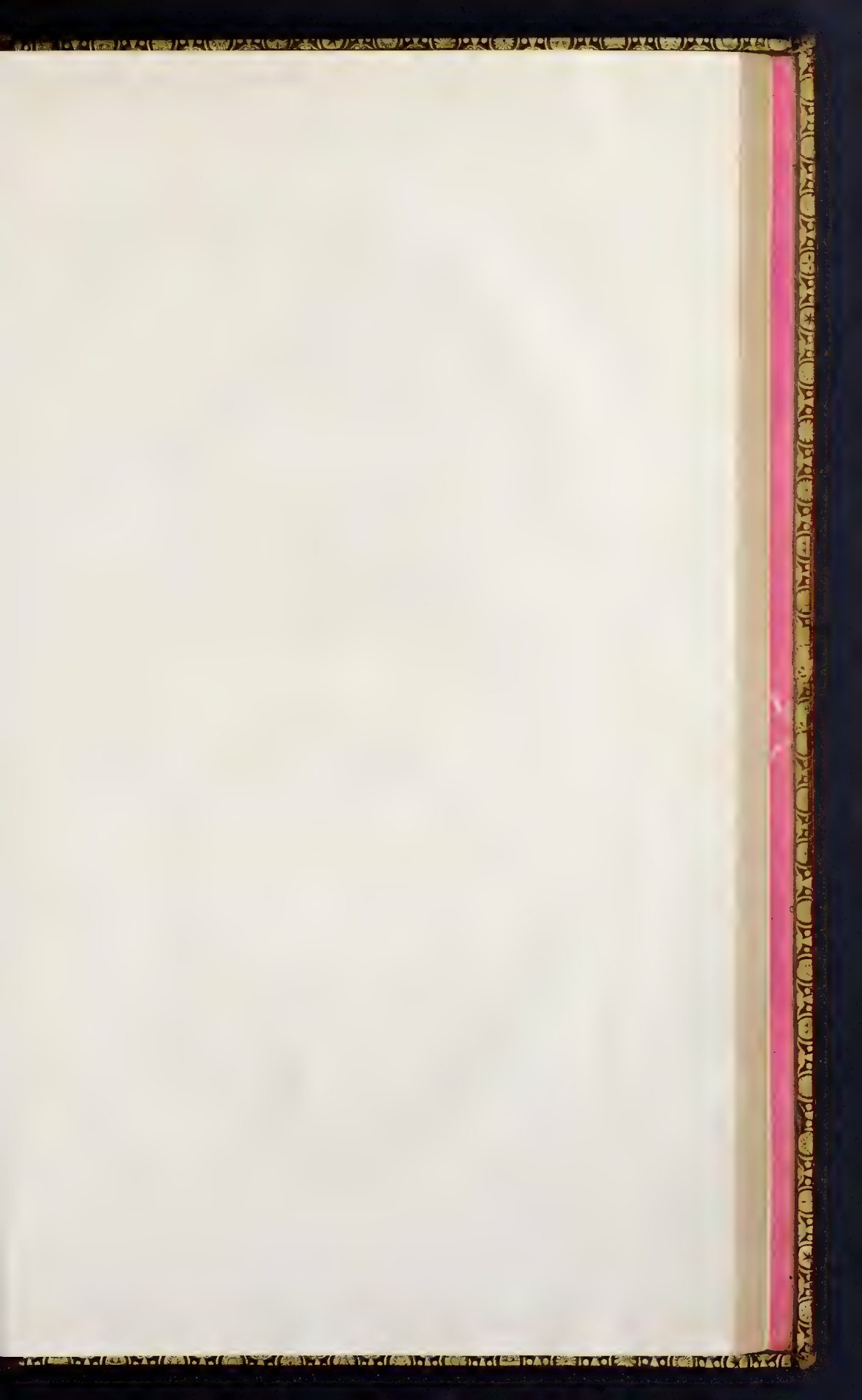
If there be any thing in which the old taste was worse than in the cutting of trees and figuring of parterres, it was their management of water; the artificial was all they sought; and this has been often introduced under foolish forms at an expence that would have drawn in a river. We see in such gardens stone-basons with some

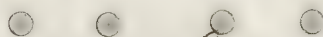
Book VII.  image in the centre, which once a year, or perhaps once in seven years, spouts up a stream for two hours, like a burst water-pipe; and for all the rest of the time we find the furred, and the foul basin half filled with stinking water, green with overgrowing moss, and the habitation of newts and frogs.

Water to be agreeable must be clean; and it should be continual: in whatsoever form it once appears, that it should have for ever. We do not come into a garden to see tricks and feats of art, but agreeable nature. The least stream that runs constantly is a treasure above all valuation; it may be extended, enlarged, and turned about a thousand ways, and all with little expence. With the advantage of a slight fall, heads may be made to convey it over parts where it is wanted; here it may swell into a basin, and in another place its stream confined within narrow bounds may run swift in a deep, clean channel, paved with large, loose gravel. Here a beam laid cross shall give it a fall pleasing at once to the eye and ear; and there its own rapidity down a small descent shall, with the interruption of some large pieces of stones thrown loosely into the middle, or raised at the sides, curl and twist, and form itself with a mixed noise of rattling, murmuring, and bubbling, into a thousand shapes of fleeting clouds. Where swift and shallow, it shall shew its gravelly bottom washed every moment by its course, and shining with an artificial polish: where deeper and more quiet, it shall reflect the flowers which the ingenious gardener plants on its green verge for that purpose; and every lily shall be doubled.

The stream may be admitted through a piece of plain and natural rock-work; and may go out unseen. Thus will be compleated all that water can do, which is agreeable to the eye or ear, and all that should be expected from it in a garden, and this at an expence much less than the foolish work of fountains.

Near some expanded part of this may be erected one of the temples we are about to describe; and this will have the new grace of reflection, if well contrived, from some frequented part of the garden.





C H A P. XVII.

Of temples in gardens.

WE have gone through the examination of what a garden ought to be, to shew where edifices should be placed in it; and what may be their beauties. From the whole our architect will gather this universal lesson, that in small gardens there must be none of these buildings; and that in others they are to be proportioned to the extent of the ground. Their due situation is an article of no small account, but is second to this; the first and principal.

He will find by these free considerations, a garden may be magnificent without being agreeable, and fine without deserving praise. If a whole manor were included in yew-hedges, and laid out into strait walks, filled in the open places with clipped yews, and fashioned into box-figures, crowded with temples, and adorned with fountains, cascades, and figures; there yet may be nothing of a garden in the whole. The idea to be properly conveyed is that of pleasure and simplicity: art we have shewn must have its place, but it must be disguised and concealed; for art has always, and must have in its aspect an idea of constraint: all in nature is free, and that alone must be imitated in good gardens. The quantity of verdure, the proper disposition and arrangement of it according to the several colours, these are the fit and proper charms of a garden. Too regular a design is always, and always must be wrong: the art will be to give variety and proportion, to regulate the walks and the lawns, the thickets and the water one to another, that there be nowhere a sameness of parts, nor in any place a repetition; that the several portions relate to, and agree with one another; so that from whatever spot the eye be directed all that it sees plainly belongs to the whole.

We have given several designs of ornamental buildings for these purposes, and we here add two others, each suited to a large garden; but of two kinds, the simple we have given plate 104, is fit for the most enriched piece; the other design, plate 105, will suit an extensive piece of ground, managed with less pomp in its several parts.

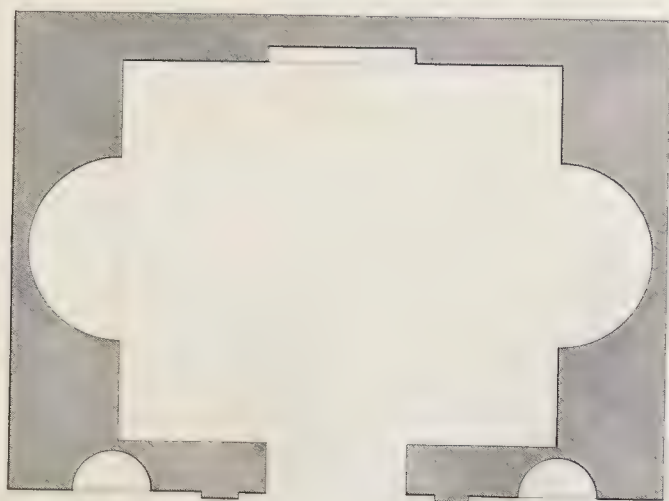
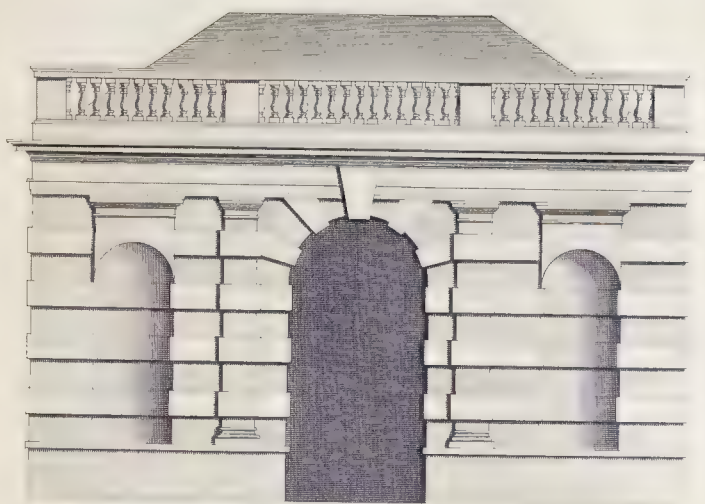
We have added to all these designs their plans; so that the builder who has considered the directions given in the course of this work, will be at no loss to bring any of them into execution. There is no necessity of explaining their several parts after what we have done on other occasions so largely under the like heads; and it is with pleasure we have taken the opportunity of accompanying these figures with so much of the general and proper idea of a good garden, that the architect

Book VII. who will thus understand their forms, and the manner of erecting them, will never be guilty of an absurdity in placing them; that he will never recommend such buildings to the proprietor who cannot have a proper place for them, nor ever erect them in gardens unworthy of such additions.

We must not be supposed to have intended a general treatise of the construction of gardens in this place. Nothing is so much wanted; but all we have endeavoured here is to supply its place to the architect, and give him the necessary fund of knowledge till such a work shall be published.

The End of the SEVENTH BOOK.







B O O K VIII.

Of BRIDGES.

I N T R O D U C T I O N.

WE enter now upon a part of the architect's province, detached from all the others, but as essential to him as any. There is the more need that we treat this clearly, because the ideas commonly entertained of it are very confused; and we must do it fully, for little has been said by others proportioned to the importance of the subject.

The origin of bridges may be traced back almost to the origin of mankind; the first disgust would separate families, and rivers were the natural bounds of the partition: those feuds would end with those who first separated, from their influence; and an intercourse would naturally be established among their descendants. The deeper the river the better it served the purpose of separating; and its depth, as soon as an intercourse were established, demanded a bridge: this is one natural and plain original; founded on that inconstancy of our nature which we should at once despise and lament: but besides this there would arise among the first families a variety of others; curiosity, a desire of enlarging their possessions, the chase, the imagination of products in countries separated by the largest rivers; all these would lead men early over them. Fording and swimming are inconvenient, troublesome, and beneath the dignity of reason: they are the means of beasts; but our faculties were given us to nobler purposes than that we should follow such examples. Men no sooner saw rivers than they desired to cross them; and they no sooner found advantage on the other side than they desired to do it often, easily, and with security. This gave the origin to bridges among people who were worthy the name of civilized. Egypt may yet see her rude sons dragged across rivers on a bundle of straw drawn by a cow; so Norden, faithful and accurate in all things, has described them: but these are not examples of human nature, except in the one instance, in its slowness to exert its qualities. The more enlightened among them many thousand years before had bridges; and we will see in all countries the remains of them, various and stupendous. Janus is honoured as the inventor of them among the earliest people of whom we have accounts in prophane history, and it is recorded on medals to his honour: we have many such truly antique, and, with the designs of bridges, sufficiently singular on their reverse: but the many ages that had passed before the period of their earliest history convince us this was fable.

Book VIII. The floating bridge has been admired in all ages, and we have various instances of its use. It is a temporary contrivance, but the invention great. We admire the Roman's bridge of boats across the Rhine; but it is with astonishment we read of that Xerxes constructed of ships over the Hellespont. The earliest Romans speak of the *Pontes utribus superstrati*; and we know the use of pontoons in the more modern arts of human destruction. These stand as objects of curiosity or wonder, and have their use on singular occasions; but it is not of these we are to treat. As we meet with the accounts and the representations of these in figures and on coins among the learning and antiquities of celebrated nations; barbarity, as Greece affected to call the state of other countries, and as Rome thought it, is not without its remains of the same kind; wild indeed, and romantick, but equally astonishing. Chains have been drawn across rivers from tree to tree, and wicker cradles extended to amazing lengths. Not only rivers have been thus made passable, but horrible precipices at land connected by this bold, wild thought: the traveller has crossed from brow to brow of perpendicular mountains, and trembled as he felt the bridge dance under him, and saw the depth below.

These in their way equal, nay in the boldness of invention, excel those vast works which, in the way of bridges upon land, formed the aqueducts of antient Rome; nor is there any thing in the invention of man more inexplicable than the manner in which they have been drawn across. We see with wonder the spider dancing in an autumn morning upon a thread drawn from tree to tree at several feet distance: the manner in which this wonder is performed we have watched, and it has been called, not amiss, the spiders flying, but human bodies are too heavy; and it is not to be conceived by what strange art the effects we see have been produced: only there remain the proofs that there has been such art, for the thing is done.

C H A P. I.

Of fixed bridges.

WE have treated of a kind of bridges that may properly enough be called moveable; they are temporary expedients, and they answer their purpose: but they could only have an occasional notice here, because they do not come within the province of the architect. A great deal is expected of him under this head in his own proper way, and he will do well to consider what has been done, and thence to advance to what may be. He will know thus what to adopt and where to improve. He will find an essential difference between those made for shew more than service, thrown over canals and rivulets in gardens, and never to be pressed with more than the human weight, and those over rivers fitted for serviceable purposes, and made to bear the weight of carriages.

He will for the first kinds see light work sufficient, but then it must be put together upon the principles of art: for the other we shall give various models, nor must he omit to consider that design by which Palladio has constructed a bridge which grows firmer for pressure, either sideways or above, whether or not he has exactly given us that of Cæsar.

These distinctions of strength are all that occur to the architect between the bridges in gardens and those over rivers for useful passage: the first is a walk continued over the water, and the latter a road continued over a river. Thus they are to be considered, and they are to be made elegant in both kinds, though with the different regards of strength.

They must be made convenient, durable, and handsome: this is the language of architecture.

In gardens there will be often beauty in raising them by a considerable sweep above the level of the surface; but this, in those bridges of constant and laborious passage, must be considered as an article of disadvantage. In regard to the breadth of the river, the level of the sides, the passage of boats underneath, and other circumstances, it will often be necessary to give a considerable height; but let the architect consider this as an inconvenience, though a necessary one; and to remedy what he cannot avoid, he must take care to make the ascent and descent easy by taking a sufficient scope.

In

Book VIII.

In gardens the place for a bridge is at the opening of some principal walk; and this should be also contrived in such manner that while it answers the purpose of communication there, it may be a proper and handsome object from other parts of the garden.

In bridges of publick service the place for them is to be such as will admit a commodious and easy passage from all other parts. A middle situation is preferable, for at any extreme the farthest parts whence it is to be crossed will have the inconvenience of too long a journey.

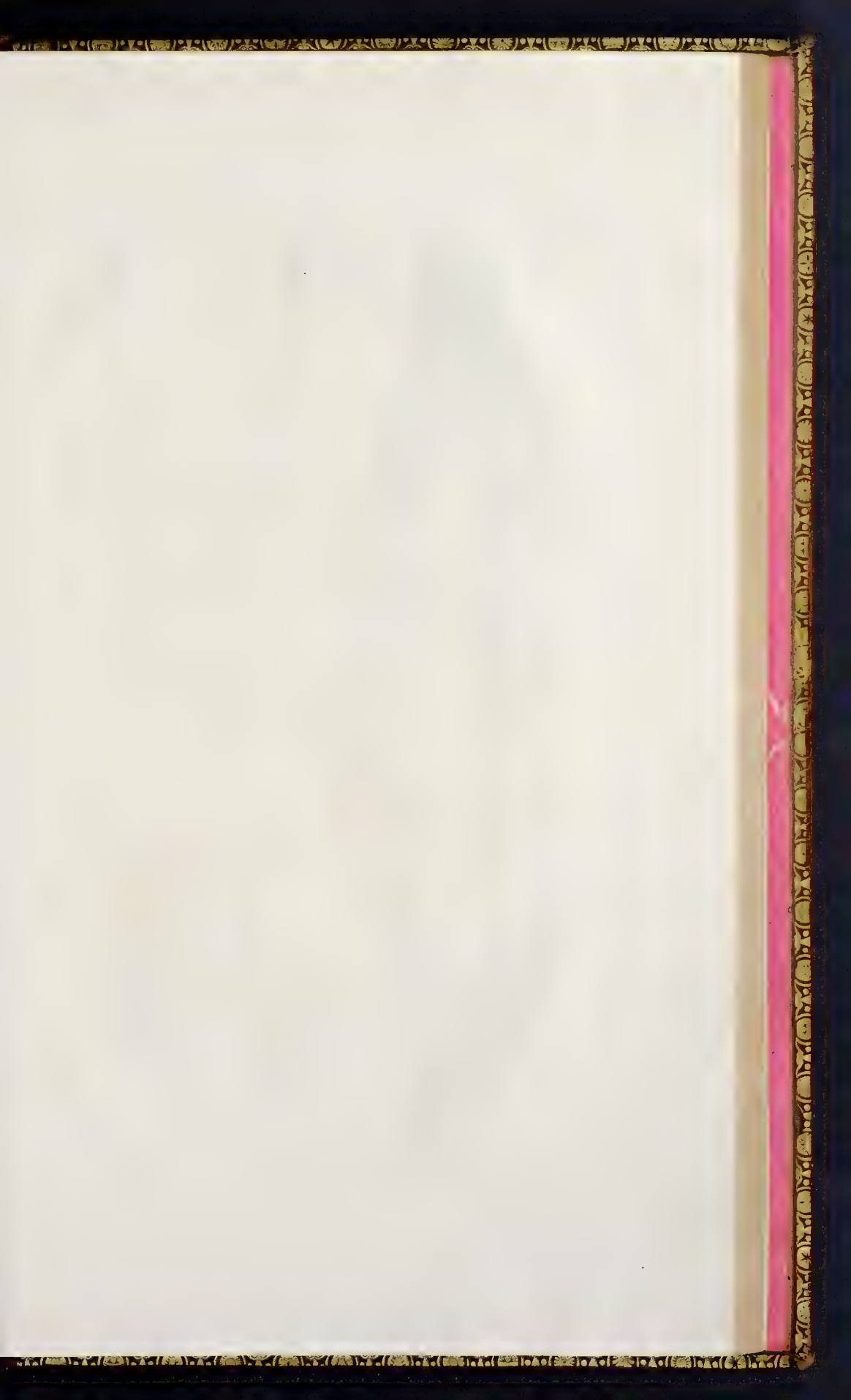
The general place being thus settled, there remains to consider the best immediate spot. This will depend upon three circumstances, the breadth and depth of the water, and the firmness of the bottom: the expence depends on one, the duration on the other. Where the water is narrowest and shallowest the bridge will be cheapest; but if the bottom be unfound the whole fabrick will fall: it is better to be at twice the charge where the structure will last ten times as long.

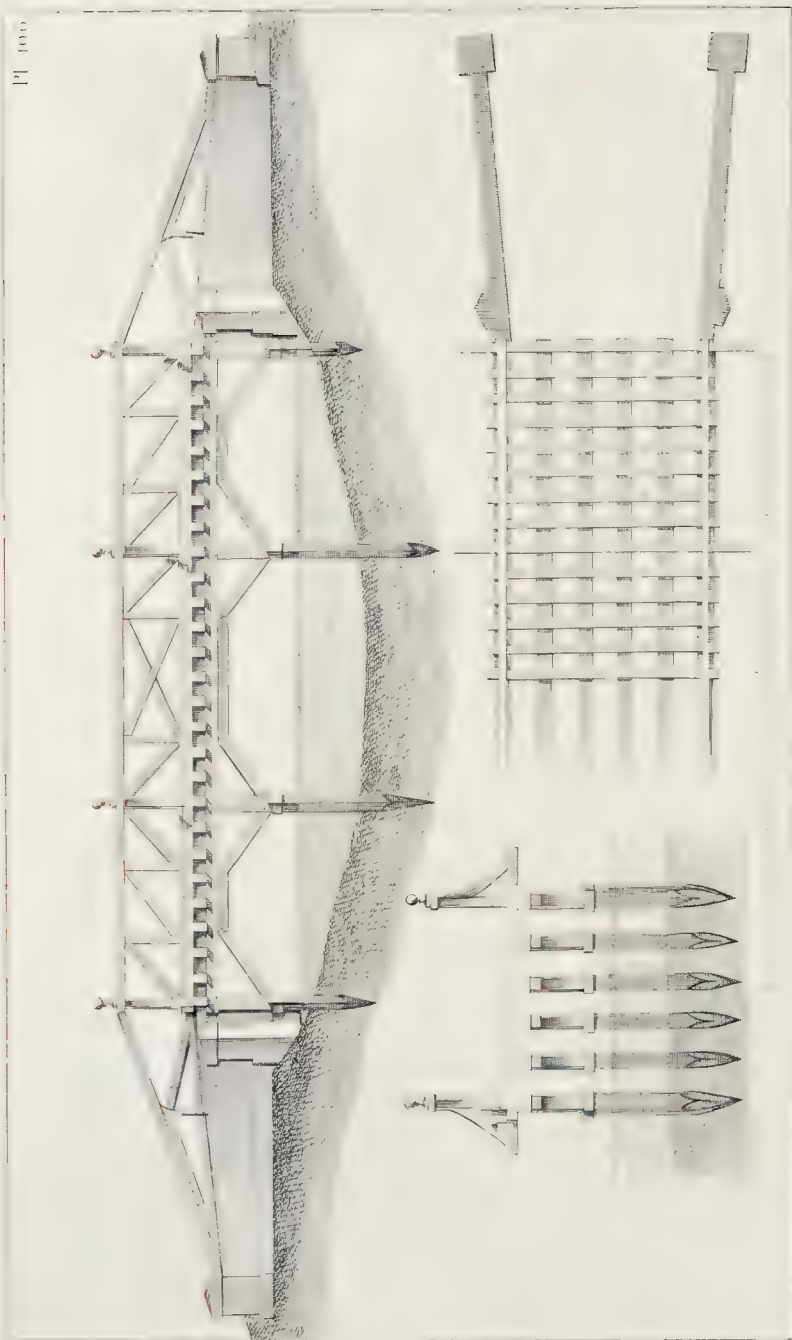
Rock or hard gravel are the best bottoms on which to build in rivers: sand is too moveable, and mud can afford no security.

The more level the bottom the greater will be the convenience of building; and on the same principle the good architect will chuse a part of the river where it runs for a considerable course strait on: this avoids the dangers of those removals of the bottom which will often happen in every kind except rock, where there are turnings and windings in the course, which give the currents force in time of floods to tear up almost any thing.

A great deal of strength and security may be given to the whole fabrick by its proper fixture to the land on each side; but this can only be had where the land itself is permanent, for in cases of many turnings and windings, the shores are washed away or undermined, and the reliance on this security deceives the builder. Violent turnings in the course of the stream also make lodgements of matter at some distance; and this may be of very bad consequence. The matter which is torn up in one place is naturally let fall in another at some distance, the most likely place for this subsidence is where there is some opposition or obstruction; and therefore a bridge may greatly suffer by it.

If, instead of the part we direct, where the river runs strait for some considerable space, the architect should fix upon a place at a small distance below some turning, the consequence upon the preceding principles would be just this: the first flood would tear up some of the bottom just where the turning lies; and the bridge a little below obstructing the course of the water, the matter would subside there. Thus there would be a choking up of the stream about the bridge, begun; and it is easy to see how difficult this would be to remove, and how the damage would encrease. The lodgement first made from above would receive and detain,





from every flood, the foulness from a great way up the river: thus by degrees the current would be choaked where it ought to be most free; the passage of boats and barges would be obstructed, and there would follow a yet more dangerous consequence, that of the river changing its course; for being obstructed in the natural bed, it would at floods force itself a passage on one or both sides: thus carrying away the land from the foot of the bridge on each side, and altering its original purpose; taking away certainly a part of its natural strength, and perhaps rendering it wholly useless.

The choaking the passage for boats is not the only ill consequence of this lodgement, it tends to the destruction of the bridge; for, beside the natural consequence of weakening it at each end by loosening or washing away entirely its supporting banks; the weight will also in time overset the whole fabrick.

Bridges in cities must be constructed upon the same principles in all respects. The most central spot, that is not liable to the inconveniencies we have recounted, is best, as it will serve equally all the inhabitants; and if in such a central place the river be not broader nor deeper much than elsewhere, and if it have a strait course and level bottom, this is against all other choice the place for a bridge.

The place determined, the next choice is in the materials, and these are only two, wood and stone. The first is cheaper, but the other most durable.

C H A P. II.

Of wooden bridges.

THE bridges of that sort we have named for gardens are naturally of wood; they are cheaper, lighter, and make a great shew for little labour: but in the great and serviceable kind, this material is far from being excluded. There are methods of building with wood that almost vie with stone for its great quality, duration.

The first point is that the timber be sound and well seasoned; the next, that it be in sufficiently large pieces. The timber must be substantial and well joined, or all will presently be in ruin.

It is not only the pressure above that must be guarded against in these, but the power of the water in an increased quantity and forced rapidity. Fifty wooden bridges are destroyed by floods for one that fails beneath the weight above.

The broader the river the larger will be the bridge; and in proportion to this the timber must be more massy; and the rapidity of the river, not only in its common course, but as increased by floods, must be computed for the fixing.

Book VIII. The bridge of Cæsar across the Rhine contains many excellent lessons for the strength of those, in whatever form, that are constructed of timber. The first pieces were eighteen inches thick, and fixed in the river, not upright, but leaning according to the course of the stream. These were double; joined together at two feet distance, and at forty feet distance in the lower part of the river, he fixed against each pair of these two others bearing against the stream. Between these double piles, which were well rammed into the bed of the river, there were placed long summers, two feet thick, held fast at each end by two braces. These pressing contrary to one another, gave that strength we named before, increased by weight above, or force sideways. These summers were joined with others laid across, and all was then covered with hurdles. Piles were placed as buttresses against the force of the water, and others above to stop the force of trees or timber which chance might throw into the stream, or an enemy purposely float down to destroy the work. On this bridge the illustrious Cæsar passed with his army to shew the Roman prowess to the Germans.

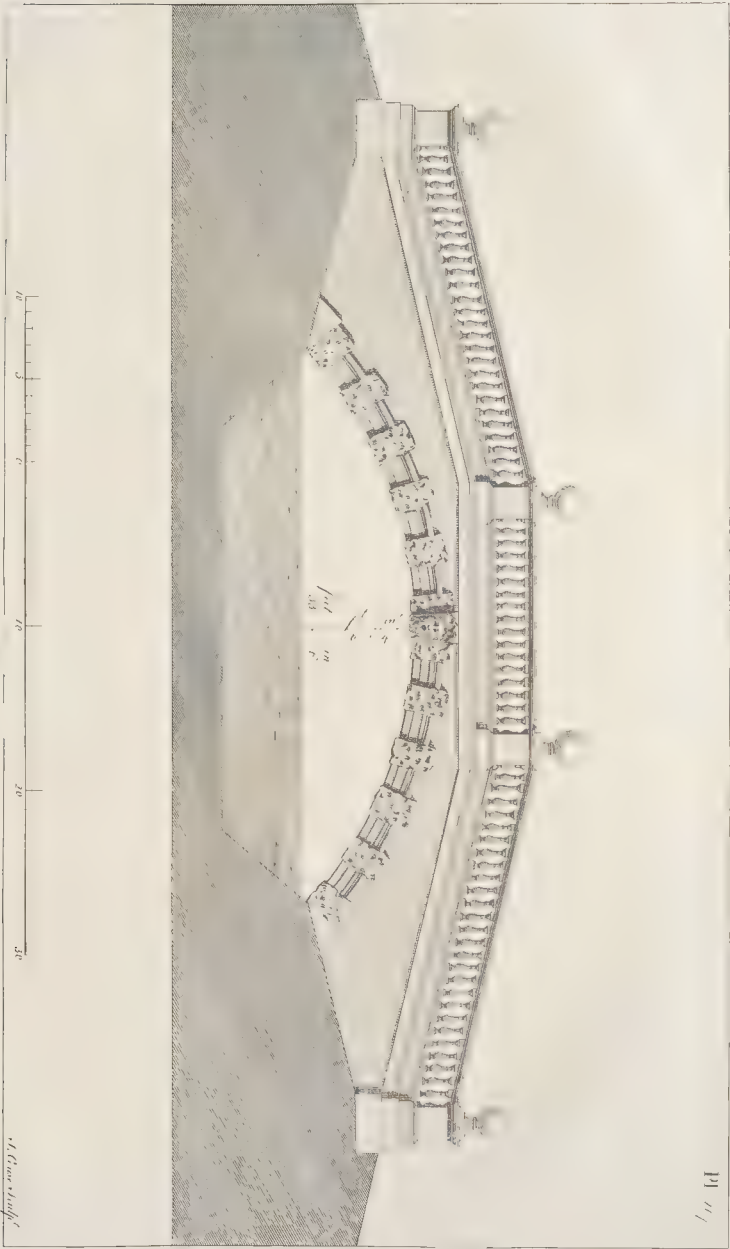
C H A P. III.

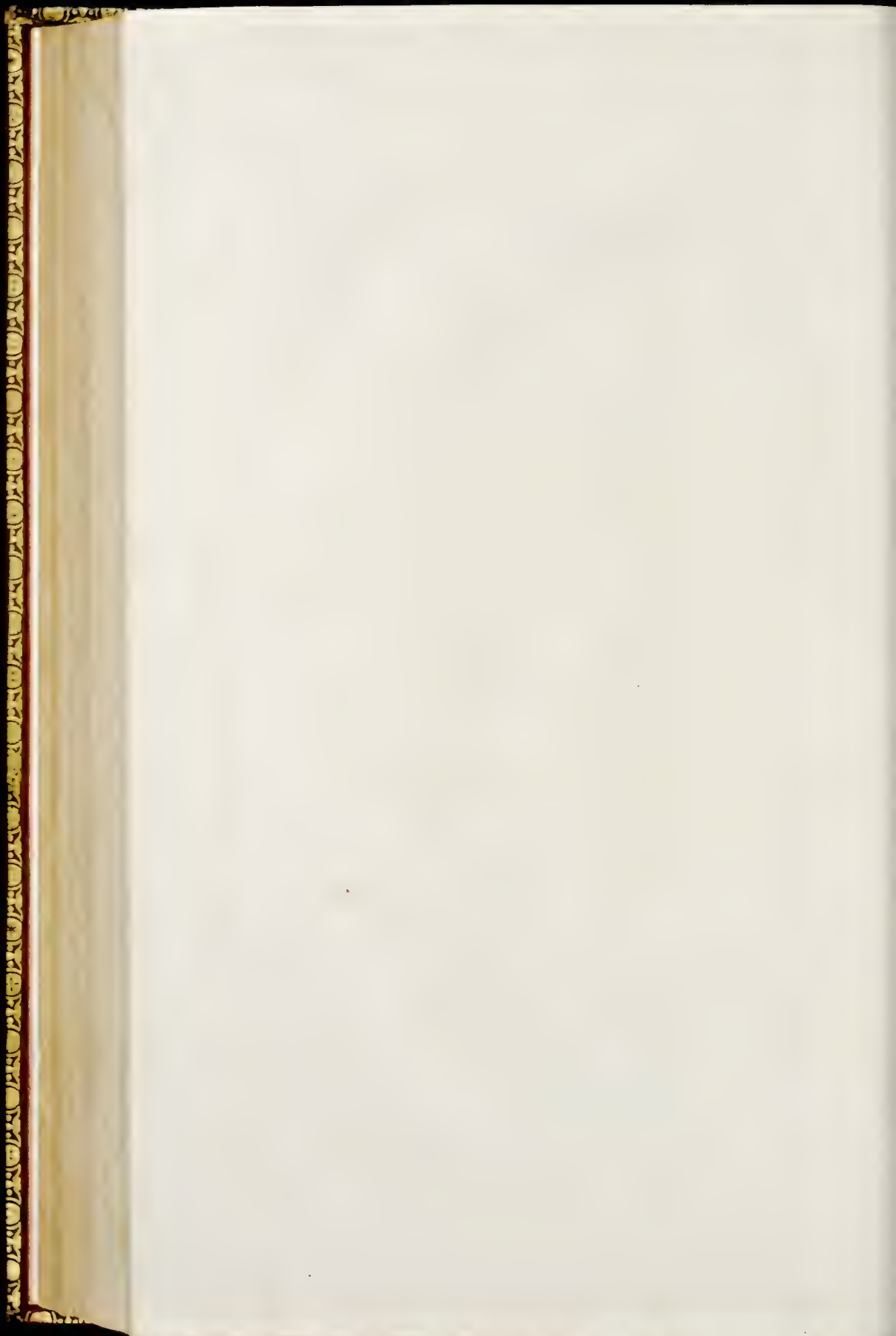
Of bridges of one arch.

THERE may be many reasons for building a bridge of a single arch, and where the extent of the river is any thing considerable no piece of wood-work will require more skill in the fabricator, nor will any do him more honour.

We have in the preceding part of this work, treating of the framing of roofs and other timber-work, spoken largely of the manner of joining piece to piece: we have shewn that there is scarce any length to which timbers may not be carried by this art; and that they will be stronger at the joints than elsewhere: this let the reader recollect, or if his memory retain but an imperfect idea of it, let him turn back to those sheets. He will in no instance find timbers necessary to be joined to a greater length than in the forming a bridge without middle piers over a river of any extent; but the arched form assists, and it may be done with more security than many would imagine.

The advantages are very great: the common accidents which throw down bridges will have no power over this. For one fabrick of this kind which fails by any natural decay, thousands are torn or thrown down by torrents from land-floods, by loads of ice or floating timbers, which the swelling of the water has brought from their places; and its force throws with an irresistible violence against the piers.





There are many places where the bridge is an annual charge; and whenever the extent is not beyond all reasonable proposal for a single arch, that should be the method of avoiding it: if ten times the price were paid it would be frugality; but indeed skill is required more than price in such a fabrick. Chap. 3.

No bridge is more beautiful than one of a single arch; none more convenient; and beside the numerous accidents which are avoided, and from which security there results a promise of great duration; none are stronger; for these, when well framed, compose a body more firm than if cut in a vast thickness from a single piece, the parts here strengthening and supporting one another.

Palladio has given a figure of one which he laid across the Cismone where the breadth of the river was a hundred feet; its strength appears incontestible from the structure, and experience shewed it to be what it seemed; but there is yet another great advantage in this bridge, which is, that it lies level with the rest of the road, and does not tire the traveller with an ascent and descent. A person unacquainted with mechanics shudders to look upon it but in the representation; but to those who know the subject there appears no danger. This advantage of building a bridge without rise we very much recommend to the architect.

C H A P. IV.

Of the construction of such a bridge.

THE great support of a bridge that has no intermediate piers must be at the banks, and in this case the natural ground is never to be trusted: therefore let the architect begin by erecting on the shore two massy buttments of stone capable to bear any pressure, and resist any force.

These raised to the level of the ground, let him take the measure of their distance and divide this into quantities of about sixteen feet.

The space thus reduced to a number of compleat measures, the fabrick of the bridge may be begun.

Its breadth cannot be determined to feet or inches, nor needs there any such account: that is an article to be suited to the immediate purpose of each occasion. Let as many beams be cut as there are divisions of this measure, suppose five; and let their length be that of the breadth of the intended bridge. These make the beds of the fabrick.

These laid, there are to be placed lengthwise on them other beams which make the sides of the bridge: but there must be a small space of the end of each of the first beams free.

The next part are the uprights, which support the railing. These must be fixed on each side directly on the first laid beams; they must be fastened strongly with cramps of iron let through the holes made for that purpose in those ends of the beams which run out free beyond the side-pieces.

This is the regular manner of working, and thus will be seen in a few pieces the extent and form of the intended bridge. The uprights are not to be all of a length; for the railing must be highest in the middle of the bridge, and slant to nothing at the two ends. The posts, or uprights, must therefore be of the form proper to support such a figure, and gradually shorter.

These, according to the pleasure of the architect or intention of the bridge, in regard to painting or ornament, may be either left naked or plain as they are cut, or carved with balls. In the simplest design they may be left square as they are cut off; in those, a little more ornamented, the tops may be cut into a number of angle, and capped, if needful, with iron; and in those must intended for show, though nothing

nothing in this kind should aim at much, they may be cut off level at the top, and a ball with a proper base and neck may be fixed upon them, as we have represented in the bridge, plate 106, of which we shall speak in a succeeding chapter. Chap. 5.

The iron cramps which fix these uprights to the cross beams are to run up a great part of their height, and there must be holes through them for fastening them by strong iron pins. They must be fastened again below with pins or small bars of iron. By this means every part of the bridge will be firmly united, and the several members will support one another: the cross-beams, the side-beams, and the uprights are by these cramps fastened into one solid mass.

This construction is not only firm in itself, but it has that happy strength we named in Cæsar's bridge, the parts supporting one another, and joined in this manner, are made more firm the greater weight presses them. This is at least true of all weights which can ever come upon a bridge; and that is enough for practice. The more they are pressed the faster they close, and the stronger is the work. The best way of working is to begin from the buttment on each shore, and the parts may be thus brought forward each way to meet one another.

C H A P. V.

Of wooden bridges over larger rivers.

THE construction of a bridge of one arch is not limited to any particular measure in the breadth of the water; but the eye of reason will distinguish without being told that these kinds are suited to smaller rather than larger rivers. We will suppose the architect employed to build a bridge of timber over a river, of twice the breadth of such as we have named: in this case it will be proper to support the work with solid buttments on each shore, and to allow it at certain distances piers, or supports of firm, upright timber, from the river's bed. The smaller the number of these the better, provided the bridge have due strength, because the fabrick will in proportion be less liable to accidents. We have observed that the most frequent destruction of these bridges is from ice, timber, or other heavy matter thrown against them by floods. The fewer the supports in a river of given breadth, the more chance these solid bodies will have of going free, or of being washed through them, instead of remaining to bear with the full force of the water against them.

The number is to be so proportioned that one may stand at about five and thirty feet distance from another: this will leave wide arches, and there will easily be strength enough given in the construction of the work with these distances. We have not only the authority of geometrical computation in this case for the supporting us; but the practice of Palladio; he threw over the Brent near Bassano. The river is a very

Book VIII. rapid one; and its breadth in that place a hundred and eighty feet. The space allowed between pier and pier was thirty-four feet six inches, and the bridge stood all the fury of the torrent: very elegant in its construction, and a lasting monument of his skill.

The rows of piles in this case should be placed firmly, and they must be in themselves solid; a foot is the best distance for them one from another; their number should be eight in each row; and they should be a foot and a half in diameter; thirty feet is a natural and usual length; and, according to this construction, the bridge will have a breadth of six and twenty feet.

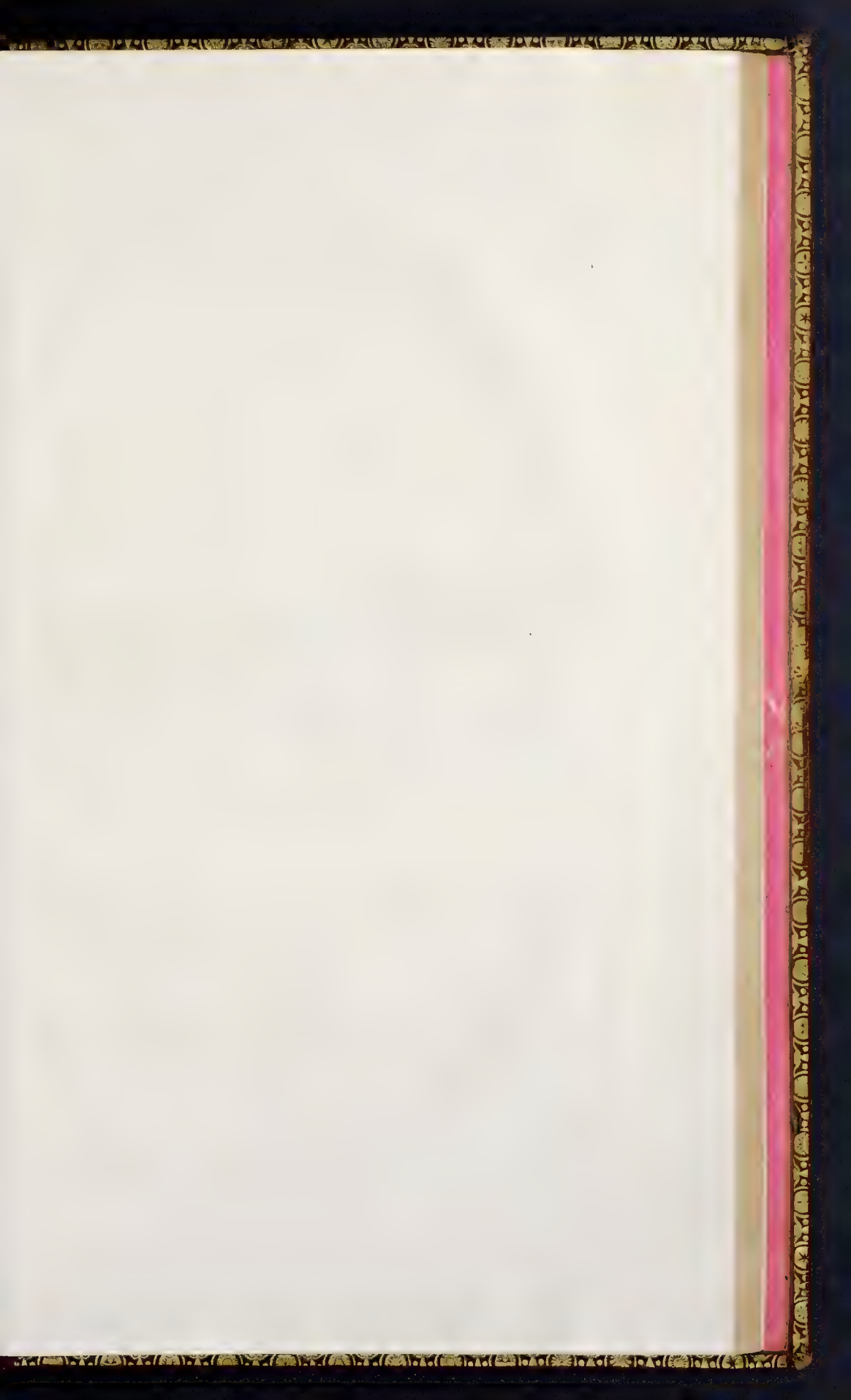
Over the rows of piles are to be placed cross-pieces or joists: the length of these is to be determined by the extent of the others, and they must be well fastened every where. These keep all together.

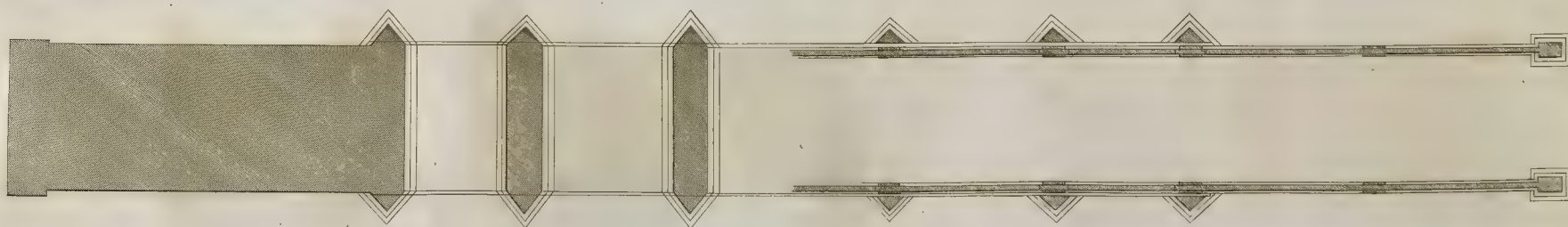
Over these cross-pieces, plumb with the supports, are to be placed eight other pieces lengthway. These would be in danger of swaging from their great length if no farther care were taken; but they will be very well supported by carrying strong shoulder-pieces each way from them; and other beams must be raised slanting under them from the piles, and join a middle-piece.

There is here a form resembling a quadrant of a circle; and it is not only a source of strength but beauty. The strength results from a very plain principle: that the beams which make the length of the bridge are double in the middle, and they and their supports mutually fix one another.

The work being thus far advanced, the bed of the bridge is to be laid on: this must consist of pieces laid across the beams we have just named. The length of these must be a little more than the breadth we have allowed for the bridge; for it will be proper to let their ends project a little. There is always an additional strength in this; and the ends thus projecting resemble the modillions of a cornice, and are an ornament. A bridge of this kind will be strong, beautiful, and of little expence: it will bear a superstructure if the architect please. Palladio covered such a one with a roof supported by columns; but for common occasions a railing of sufficient strength, breast high, supported by uprights, and decorated with balls, as we mentioned on a former occasion, will perfectly well answer the purpose.

The banks must be in these cases secured by a strong wood-work, or by buttments of stone; and upon the same principles may be built a variety of bridges of this kind: the timber being suited to the depth of the water, and to the length of the bridge. The lighter the less expensive; but where there is great breadth, the strength ought to be more consulted than the charge; for the danger is great in slight bridges, and repairs are difficult.





C H A P. VI.

Of stone bridges.

THE wooden bridges whereof we have hitherto treated are cheap in proportion to those of stone; and they will stand a long time, but the solidity, dignity, and superior elegance of the others, when well wrought, leave no room for comparison in point of real excellence.

These therefore are the kind the architect should propose where the proprietor does not limit the expence, and where he hopes to do himself the most lasting honour. The principles on which the stone bridge is to be constructed differ in nothing from those of the timber ones with respect to choice of place and situation. The bottom must be sounder for these than for the others, because more stress is laid upon it; and the banks must be defended by buttments of stone, which here make a natural part of the work.

These heads or buttments at the banks cannot be too strong: they will be exposed to a great weight; and upon their firmness will in a great measure depend that of the whole bridge: for this is to be considered as one great arch, and it must have its lateral pressure. If these buttments, which are its support, give way, all will be in danger of cracking; but while they are firm the more the weight the more compact the whole becomes. These buttments, or head-works, must be carried a considerable length upon the shore, that they may have the more security and force; and the way being carried over these to the bridge, not only the strength will be more, but the passage will be continued, though waves and floods should eat away the banks.

The buttments being made, the next consideration regards the piers. These must be proportioned in number to the extent of the river and intended form of the bridge; but it is an universal rule, that they should make an even number.

This is a doctrine delivered from father to son among the architects, though many receive it without examination; and those who call themselves a little wiser, have rallied it as a piece of superstition. The judicious architect will return the raillery upon themselves: he will shew them by various designs, that an even number of piers make a more agreeable appearance than an odd; and he will add, that such a number leaves an arch in the middle, where the odd number would place a pier. The course of the river is naturally strongest in the middle; and would an architect there place a pier to obstruct its course? The giving a larger opening than for the rest in that place allows passage where it is most wanted, and is every way most rational and convenient.

Book VIII. In many places the course of the river is less regular; but still it is easy to find where it is strongest. This will be seen by the clusters of floating refuse matters that are carried upon it; and even this is to be consulted in a secondary manner; the architect contriving openings, and not piers in those places.

The places for bridges we have considered before; and this being chosen, something is to be added as to the time of beginning the work. Autumn is the season when rivers are lowest in water; this is therefore the most eligible time; and in places where the tide has influence, all experiments must be taken at low water.

In some places the foundation is made by nature: these are happy circumstances; in others it must be by digging. Gravel or rock are the two safe bottoms. On these any weight may rest; and nothing is required but a level surface.

We speak here of that hard, clean, and solid gravel which lies in a mass like rock, and is of a great depth. In some rivers the bottom is a loose gravel lying over mud: this is to be considered in the same light as sand; and both are to be dug through, if that can be done, till the architect comes to a firm foundation: for they are not of that nature: and no dependance must be placed upon them.

In some cases there lies a sound bottom at a small depth beneath them; and in such instances the sand or loose gravel must be dug away a sufficient compass for laying the foundation of the piers. In other places no sound bottom is to be found under them within any moderate depth; and in these cases, recourse must be had to piling.

For this purpose piles or long beams of oak shod with iron must be used: the sand or loose gravel must be dug away to some depth, and they must be driven in with engines till they come to the firm ground and get some way within it. Their heads are then to be sawn off level, and the work carried on upon them.

When the foundation of the pier is laid, one part of the bottom must be enclosed and kept dry, that the workmen may pursue their business unmolested by the water; and thus they are to proceed with the whole.

The thickness of the piers must be proportioned to the width of the arches. About a fifth part of the breadth of the arch is the proper measure, but this may be varied according to the circumstances: they will very rarely be required slenderer than one sixth of the breadth, or more massy than a fourth.

When the piers are thick, let them be built with large stones. They are to bear a great deal. And they should be so bound and fastened together as to be like a rock: they should be held together with cramps of iron soldered in with lead; and these bearing jointly the weight or pressure, the whole mass will be as one stone.

The form of the piers is left in a great measure to the fancy of the architect, only that he must observe not to oppose a flat face to the stream. Some prefer a circular

OF ARCHITECTURE.

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front in this place, others a right angle: there is no preference to be given in absolute terms to either, but the occasion must determine. If the great care be not to interrupt the stream, an angle is the best; if there be fear of heavy objects striking against it, the best is the circular form.

In the construction of arches the work must be very carefully done, and large materials used. There is no making a large arch of sufficient strength with small stones. The stones should be examined in regard of their quality as well as bigness: they must be sound and firm, and they should be cramped in with iron.

The calculation of what they are to bear should be always made upon the extreme: not from the common course of things, or known weight of carriages; but like a proof of cannon with a double charge. Accidents may occasionally bring upon it a much greater weight than is first thought; or its fabric may from some unseen cause be less solid than imagined: it is best therefore to err on the side of too much strength.

C H A P. VII.

Of the form and covering of arches.

BY arches the student should understand segments of a circle. The Gothick are disclaimed, and there is no form which is capable of so much strength as the plain sweep of a true circle: the elliptick we have treated of elsewhere, and they should never be admitted for bridges.

In the first construction of buildings the Gothick or sharp arch was not unnatural, but they improved who took off the point.

The first arches probably were suggested to men by the vaulted walks formed with double rows of trees: these are very pleasing, and they are of the sharp kind. Nature sends up the branches of trees in an oblique direction, therefore they meet, where opposite rows stand near, in this pointed vault, resembling the common roof of a barn.

These the first builders copied, but the sweep of a circle was soon found a more eligible figure, more noble in itself, more strong, and capable of more bearing: they were therefore unpardonable who knowing this improvement, fell back into the paths of barbarism.

Book VIII. The arches of a bridge are therefore determined by all the laws of science to be of the circular form: they are more strong, more elegant, and capable of more duration as well as bearing.

There yet remains a question which architects have not enough established in their practice, though nothing is more plain in theory. The arch of a bridge we have determined is to be a part of a circle; but of what quantity? More than the half of a circle cannot be used; but less may, in various degrees; and the judgment should direct where the fancy of the architect usually does.

Let all be taken into consideration together. The semicircle is the strongest and the most elevated of all figures for an arch; and it has the vast advantage of all the pressure falling upon the piers: but with those advantages there are inconveniences; the principal is height. It is a great defect in the construction to let a bridge tire the passengers with a steep ascent; yet this in many cases will be the necessary result of the semicircular arch. We have directed how it may be alleviated, but the architect must resolve, whether these helps will or will not obviate the objections.

There are also instances where the disposition of the piers will not well admit of semicircular arches: we have named the accidents on which the rule of this disposition depends, some of which are unconquerable, and, of an absolute necessity, must be complied with; and in these cases the strength and beauty of an arch, such as we recommend, are not enough to atone for variations in these essential parts. Therefore the quantity of the arch must be lessened; and the architect may be saved a great deal of needless calculation by being told the next proportion for these parts to the half of a circle is a third.

This is his choice, but a great deal more is to be considered: for the nature and bearing of the work are altered by it.

In a design where the arches are to be semicircles, the great attention of the architect must be to give strength to the piers, and a secure foundation; for in these arches all the weight presses there: in the lesser arches the force will be very great upon the buttments or heads built at the banks; and these must therefore be strengthened accordingly: we have directed that in all bridges this be well secured, but in these there must be greater caution.

Here the student sees another instance of that invariable rule we gave him of taking the whole of every thing into consideration before any part is executed. The strengthening the banks is always proper and always necessary; but we see here that, beside the various accidents which may make it more needful in one place than another, the very construction of the bridge itself may in a great degree influence in this matter.

C H A P. VIII.

Of the duration of stone bridges.

IF the proprietor or the publick, on lesser or on greater occasions, should be induced by the cheapness to prefer a bridge of wood, we shall remind him of the vast difference in duration of the two kinds, and may support what would else seem extravagant accounts, from the remains of Roman bridges, some almost entire. The Elia bridge, the work of old Romans, stands to this day: it is the bridge of St. Angelo over the Tyber. The Quattro Capi bridge, so called from the four-faced statue we have mentioned treating of the Termini, is the Fabrician bridge, named from Fabricius its great founder. The Certian bridge of old Rome is St. Bartholomew's bridge of the modern denomination; and the Rustick bridge, called at this time St. Mary's, is the famed senatorian bridge of antique Rome.

All these remain in a condition that does great honour to their builders, and will in the eye of reason plead far beyond words in preference of those of stone. These the judicious architect should quote to those who think of nothing but the price of such structures; and we have told him also how to build for ages.

CHAP. IX.

Of the construction of stone bridges.

THE ornaments of which stone bridges are capable are very great ; but, to be properly employed, the architect must take them into consideration in the very beginning, and form his whole design accordingly.

This may be varied in the number and form of the arches ; and the superstructure may be carried to any degree of elegance.

We have shewn how a bridge of timber may carry columns supporting a roof, even where the whole fabrick is far from massy. In more solid structures of that kind, and much more in those of stone, the genius of the architect is left unlimited, and houses and publick places of resort may be contrived upon them.

We shall consider first those of a simpler structure.

[The dimensions of the river are the first article in the consulting such a design ; and according to these the bridge may be erected with different numbers of arches. A hundred and eighty feet was a measure we took before for a wooden bridge, we will suppose a river of the same extent to be the place of a stone one. The current, the ground, the banks, and every circumstance considered, we will suppose three arches allowed to the bridge. The central arch must be larger than the others, but the proportion of that excess must be considered. If we allow sixty feet for the breadth of this, and forty-eight for that of the two others, there will be sufficient proportion ; and the piers needful for supporting such a bridge will leave free compass enough for the course of the river.

These piers, if made of the solid and large materials we have directed for these purposes, need only have a fifth of the measure of the middle arch for their thickness, that is, twelve feet ; and this they must be allowed with the best workmanship.

If the current be very sharp, the piers must project forward beyond the body of the bridge, that they may stand uninjured, not only the force of the stream, but the accidental blows they may receive from hard bodies brought down upon the water. There is no security against these accidents equal to this of carrying on the pier beyond the measure of the bridge, except that of carrying on a lower building far beyond that. This is oftener done than needful.

This kind of bridge, under such dimensions, of the length, number of the piers, Chap. 9.
and disposition of the arches, would have been too steep of ascent with the
semicircular form; therefore the smaller measure is every way preferable, and under
this distribution of parts, it will be very elegant.

No more is required for the construction of this bridge; and the architect is
at liberty to adopt what degree of ornament he pleases.

There must be a defence breast-high, or more; and this may be either a plain
parapet, or a balustrade work; and over the piers may be lodges of convenience for
many purposes; but this must be determined, not by fancy, but by the rest of
the structure.

If the under part be plain, the parapet should be the same: if the rest of the
bridge be more ornamented, this may take also the same turn of decoration.

A bridge of this construction takes the less ornament, as the number of parts are
fewer. Thus over each pier there may be a nich in which to place a figure; and
there may run a cornice the whole length on each side. This will be a very great
article of elegance, and is supported by the antique. We have mentioned the ends of
the transverse pieces in some wooden bridges being brought out for purposes of
strength and service, and have observed a great advantage they would have this way
in resembling the modillions of a cornice; but in those of stone the cornice itself
may be used with great propriety and beauty. We see it in the Arminian bridge,
and that was a work of the Augustan age, nay, of Augustus himself.

It may not be amiss to trace in this bridge, which is one of the most elegant re-
mains of Roman work in its kind, their idea of proportions; which the architect
must take care not to follow, unless where the circumstances are alike.

This bridge has five arches; and the three middle ones are equal: the extent of
each of these is twenty-five feet. The two others correspond from the opposite sides,
and their measure is happily diminished by a fifth: they are twenty feet each.

All the arches are perfect semicircles; and their piers are in diameter half the
height of the great arches with a small surplus.

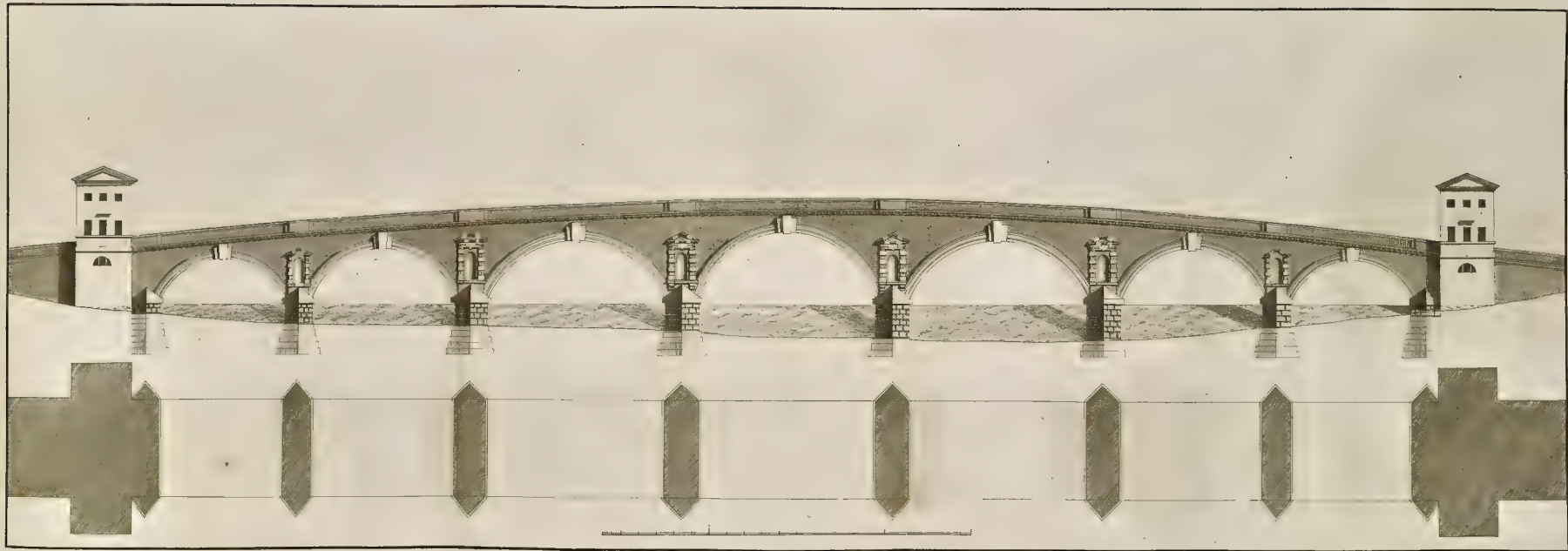
These proportions we learn from this delicate remain, but this is not all we may
learn from it.

In speaking before in general terms of making the piers, we have directed that they
in general face the stream with a right angle. Those who have seen this in the most
admired works have thought to improve the form by making it an acute angle; but
in this the edge is weaker, and the whole too slight. These Romans knew what
to attempt and where to stop: in this elegant bridge, as in many, nay, we might
almost say all the others of pure taste, the pier meets the stream in a right angle.

Book VIII. The decoration we proposed for a stone bridge before, has had place in this; niches remain over the piers, in which the emperor who built the bridge placed statues of the heroes and the geniuses of the age; those who defended and adorned their country: but there succeeded ages like to ours, ages which, producing no more such men, looked on the memorials of valour and of wisdom as reproaches; and left for barbarism to destroy.

Where the course of a river is rapid, subject to be swelled by floods, and furious in these conditions; the best method is to allow rather one large arch in the middle, than, as the elegant structure of which we just now spoke, three equal. The piers of these will break, disturb, and interrupt the course of the river; and the more the water is disturbed the more impetuous it becomes in all these instances.

But in observing these instructions let not the young architect run into excess: though there should be a considerable difference between the central and side arches in such a bridge, yet this must not be in such extravagance as to render the side arches useless.



~A Design Intended for Westminster Bridge.~



C H A P. X.

Of dividing the water.

THE main body of the river must be allowed to keep its course in the midst, and the great arch is designed to give it passage. But let our student look into nature, and he will see that wherever there is this violent force in the body of a stream there is a rippling current also at the sides. This let him consider in the construction of the bridge. As we propose the arches the course will be thus; the main body of the water with its full force will pour uninterrupted through the great arch, and these two smaller currents of the sides will also have their proportioned arches; they will be divided from the main current by the piers, and this without molestation or interruption; and as they run free, the main body will receive no change in its condition.

This we propose, and this will be the case in a well constructed bridge; and in this way even the furious body of the stream, being undisturbed, will run off evenly.

But if this direction be carried to excess, and the side arches be made very small, the consequence will be worse than if there were none such. In that case the body of water would only be too much huddled together; and in this it would be thus collected and distinct at the same time.

These small arches would take their share, such as it was while the river kept its common depth and bigness; but as it rose and swelled, they would be incapable of receiving or passing that due proportion: there would be all the conflict of disturbed and uninterrupted water at the piers; and the main body, increased by the addition of what should have gone off in these side streams, will be thrown into new fury and confusion just at that place where all the labour of the architect should have been joined with all his skill to give it quickness; that is, under the main arch of the bridge.

From these considerations let him learn the necessity of a just division of the space and proportion of the arches; and if he would add example to the precept, let him examine from the practice of others in celebrated ages, and in the climes where his great science flourished, what suits the purpose.

We shall carry him back to Italy.

Over the Bacchiglione, near the church of Saint Mary, is a bridge of this kind: it is a mixed work, antique in part, but finished by a hand more modern. The river is such as we have described; the bridge of three arches, and of these one

is

Book VIII. is pure antient Roman, as are the piers of all. The river, full or low, rapid or calm, is carried with a happy freedom through these arches; and their proportion is this: the measure of the principal or central arch is thirty-two feet, that of the two others twenty-two and a half. The piers are in thickness one sixth of the great arch.

Here the piers are strong enough not only to support all weights that may come over the bridge, but they also resist the fury of the waves in the greatest floods; and while they stand the force of the torrent, do not too much interrupt its course: the whole bed of the river is divided as nature dictates into three parts, and the full quantity of the tide currents being taken off, the great body which rolls along the midst moves freely.

Various circumstances may require that the architect alter these proportions; and he must comply with such necessity, only remembering, that as truth lies here, the less his deviations are, the better. Here is an instance of propriety, and we have selected it, because it is, more than others, adapted to a middle course of things, and to general use.

C H A P. XI.

Of bridges without decorations.

WHAT we said of elevations in the designs of houses, is equally true here; that proportion will stand in the place of ornament: we shall see this very conspicuously in some of those old bridges where their great builders designed strength, and had no thought of decoration. The bridge over the Rerone at Vicenza, which from its nearness to the flesh-market, has obtained the name of the butchers bridge, is of this kind, and deserves to stand as a model in like circumstances for those built at the expence of the publick, and intended only for real use.

In the more expensive and more decorated buildings, of whatever kind, the architect has the free scope for his fancy, and the means of greatest honour, but it is in the plain and simple kinds that he must use all his skill in the proportion: and these will never fail to give him equal credit in the eyes of the judicious. We named on this occasion the plain Vicenza bridge, of which it is not in the intent of our work to give a figure; for what we propose are new designs: not the repetition of plates every traveller has rendered cheap and common.

In this whereof we now speak, there are, as in the preceding, three arches, a larger in the centre, and on each side of it a smaller; the compass of the arch is less than semicircle, and thence the bridge is of easier ascent.

To compensate for the want of strength in such an arch the piers are solid and well wrought, and the buttments firm. These give all the needful addition of support. The pressure in those arches, which are less than of the semicircular form, is upon these buttments in some part, and they are thus prepared for it. Chap. vi.

The measure of these arches is very happily calculated for such a service: and they may stand as a model to succeeding time; their duration shewing the truth of the construction. The two side arches rise one third of their breadth above the impost; the rise of the middle one is somewhat less: and the thickness of the piers is one fifth of the measure of the lesser arches.

We know this bridge has stood two thousand years; and we have reason to admire its structure: but those who would have their works of the same kind last a like period, must more than admire, they must understand its construction.

The materials are not of the most lasting kind; for, though stone, it is a soft species: the truth of work has kept the whole together so many ages.

This is what we neglect; this the Greeks, and this the Romans studied. Their stones were cut into vast masses, the utmost the quarry would afford without flaws, and however rough or unornamented, the exterior part was left, their sides that joined were smoothed to a hair's truth.

Their mortar might be very well said to have its temper from the labourers sweat; no toil, no time was spared to blend its parts.

Thus were the materials prepared, and they were put together with equal labour: no art was omitted in connecting and uniting them; and thus accuracy and industry formed the whole so firm as if the bridge had been cut out of one mass, where there had been no flaw or grain in all the quantity.

C H A P. XII.

Of more magnificent bridges.

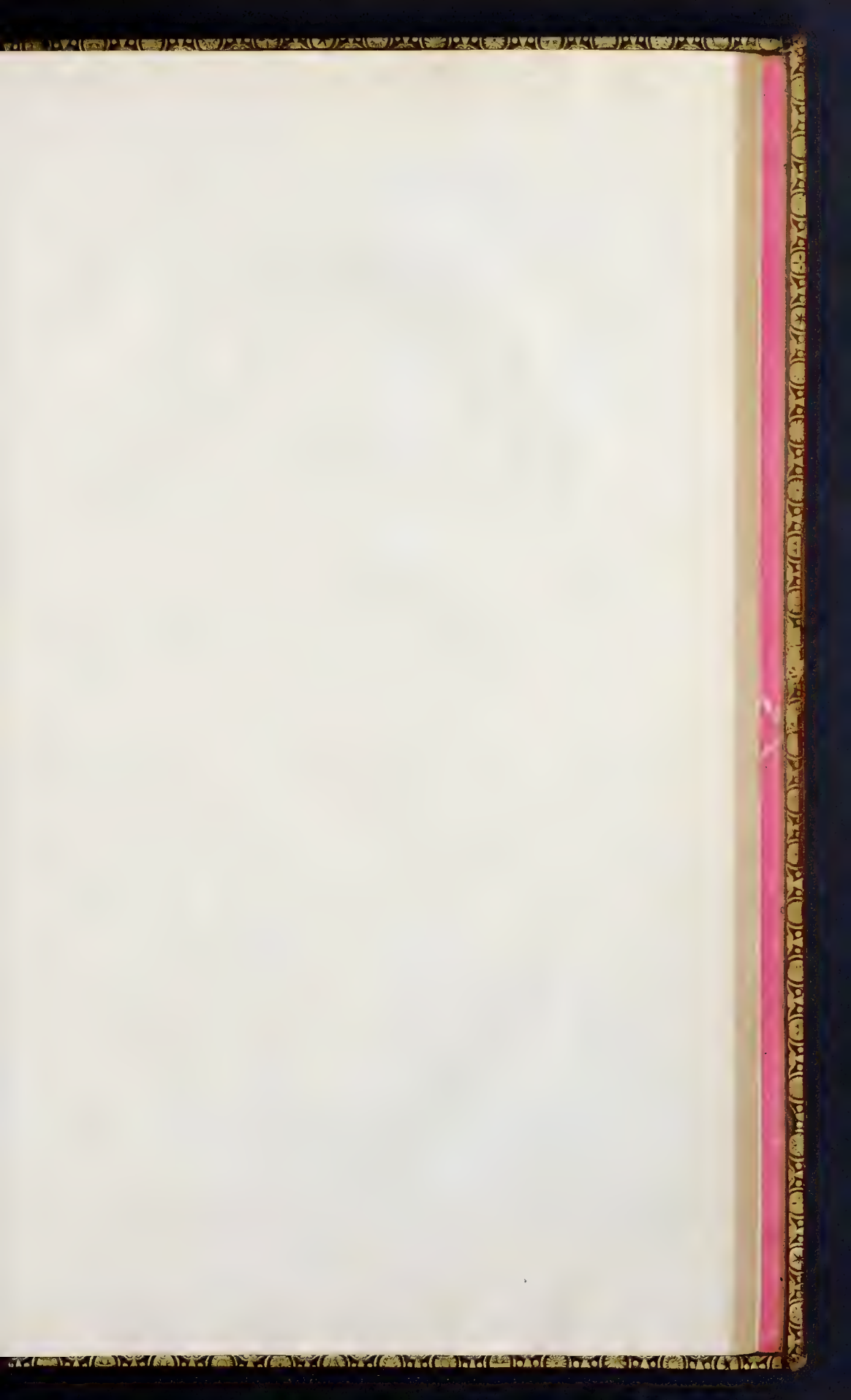
THE structure of these useful and noble parts of the architect's science having been thus laid down, we shall devote one chapter to the buildings they may support, the uses of magnificence they may serve, and the honour the designer may attain by a noble and elevated imagination in their contrivance, where no price is spared.

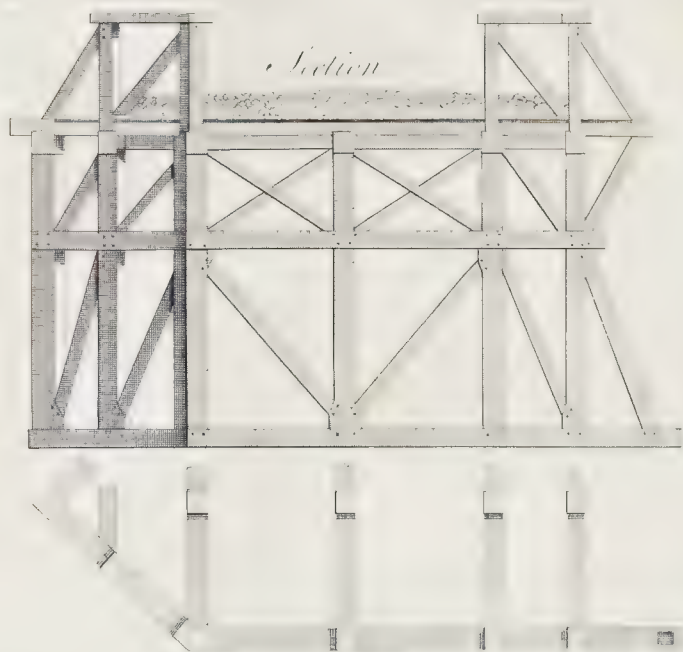
We have observed that they may receive streets and walks of resort; and in great cities no places could be fitter for the purpose. Their strength, when constructed according to these rules, admits of any superstructure: they are elevated so that they have a better air than can be found in streets and squares; the water is open to them, and in hotter climates the coolness it gives the air is highly pleasing: the vessels upon the river afford a view more agreeable to the mercantile world than all others; while the eye of sedate contemplation takes in the remote prospect from the height of the situation, and hears the murmur of the water from the piers that break it always in its course; though in our methods of construction it be not much.

From these advantages the genius of the great masters in the science has deduced vast splendour. We see bridges spacious enough for the greatest resort, and commodious as well as elegant; covered with buildings, adorned with trophies, and displaying to the eye all the elegancies of the superior orders. Palladio, from whose immortal works we have enriched this treatise with many of its best and greatest instances of antient architecture, designed a bridge of this kind where there ran three spacious streets composed in the principal or central of very considerable houses, and in the others which were narrower, only inferior to those of the first in size. The warehouses of merchants may with the greatest convenience be disposed in the principal street of such a bridge, and shops along the others; all convenient, and all subservient to the principal design of rendering it a place of concourse.

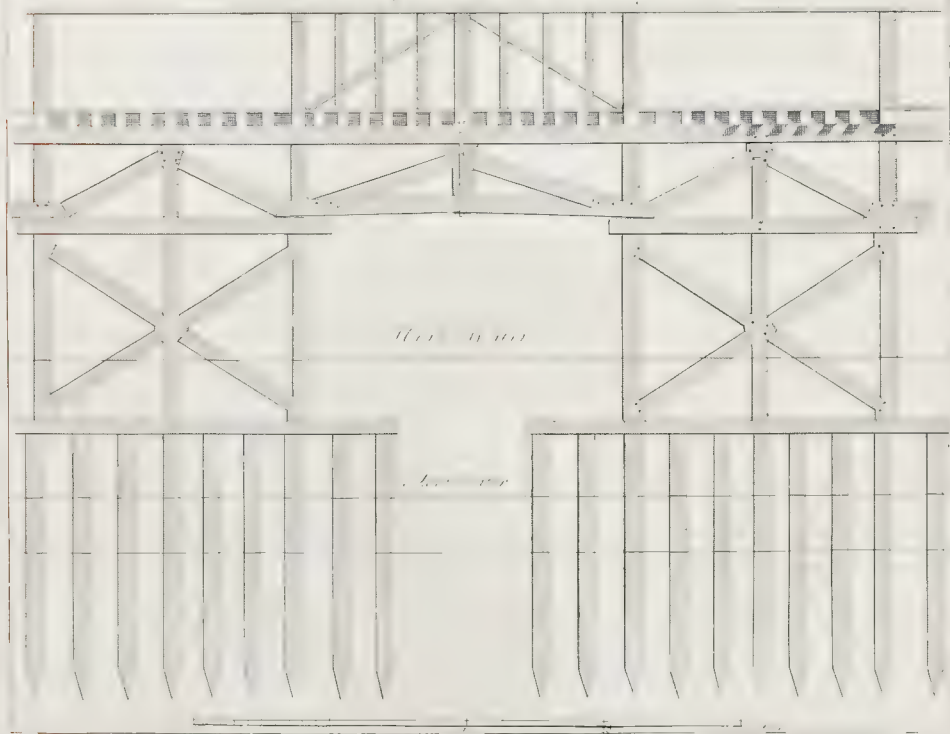
But there will require in such a design vast compass for the width of the bridge. We have seen very near home what great inconveniencies may arise from want of breadth; and how ill houses are placed where precautions of this kind have not been taken. Galleries were intended on this bridge in three places; at each head, and over the principal arch: this last for the resort of merchants; and it is not easy to say, with how much dignity and elegance such a plan might be constructed.

This

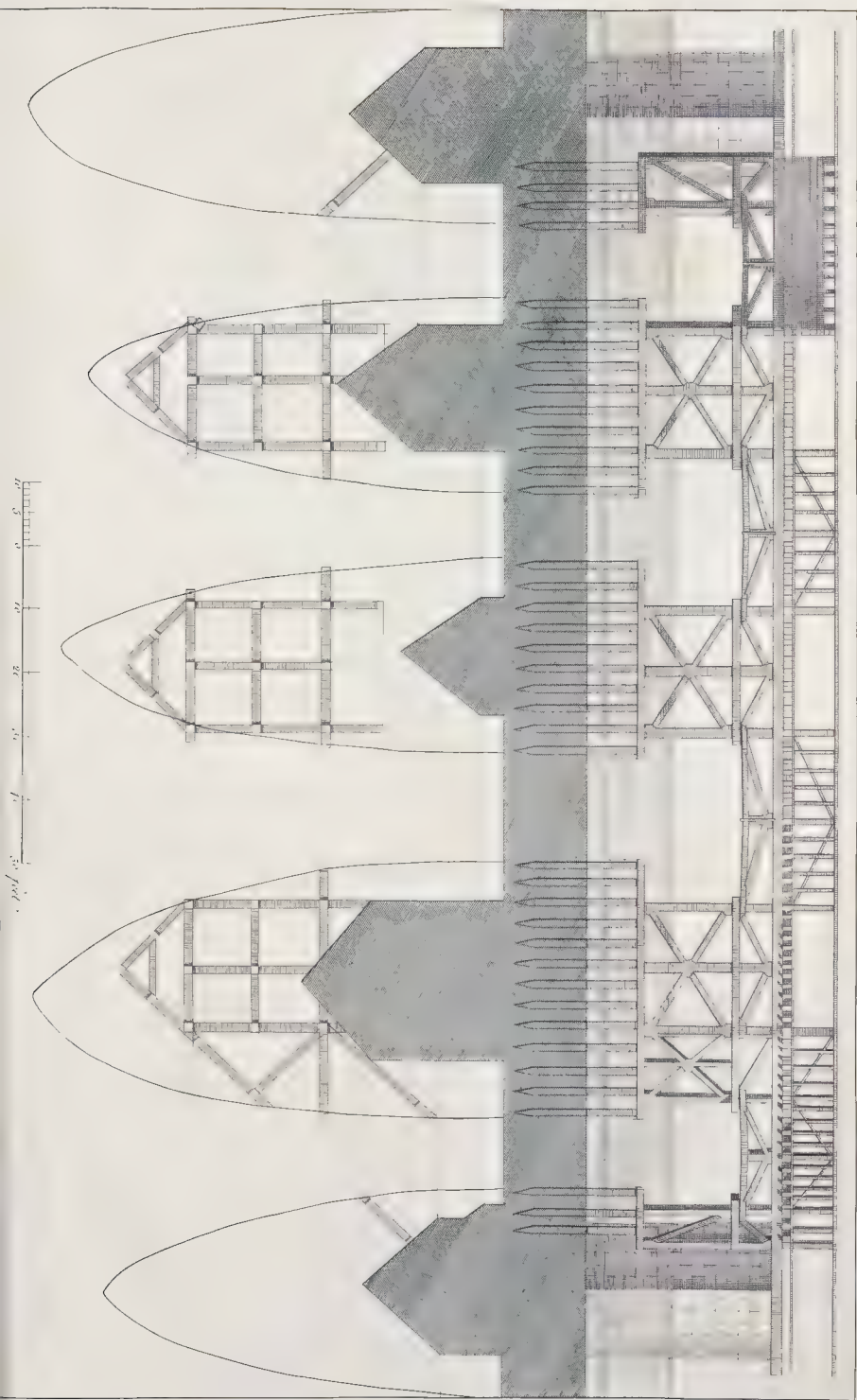




Truss for Bridge over Lower Lane



Temporary Bridge





This would have emulated the works of antient Rome, upon whose Elia bridge Chap. 12. there were originally galleries with columns of brass; and every ornament that happy period could devise to accompany them.

Such have been the designs of some whose genius in later date has wanted nothing of the antient; but there has not appeared that patronage among the great, or spirit in the publick, which should have countenanced and employed them in the same scope of an unbounded execution.

To this, which we have given as the general theory of bridges, we have added figures of new designs, founded upon these principles, and corresponding with the everlasting rules of the science. The student will find in those plates the manner of reducing rules into execution; and will see examples, which he may vary upon the same plan a thousand ways, according to the necessary circumstances, still preserving one uniform conduct. He will find examples of larger and smaller, more and less chargeable; and whether his proprietor chuse elegant or plain, ordinary or chargeable, he will find the methods for raising them illustrated in those examples. Where the rules of a science are perfectly understood, a few instances serve for all; and where there is confusion in the first principles, nothing will rectify that error.

The End of the EIGHTH BOOK.



B O O K

Book IX.



B O O K IX.

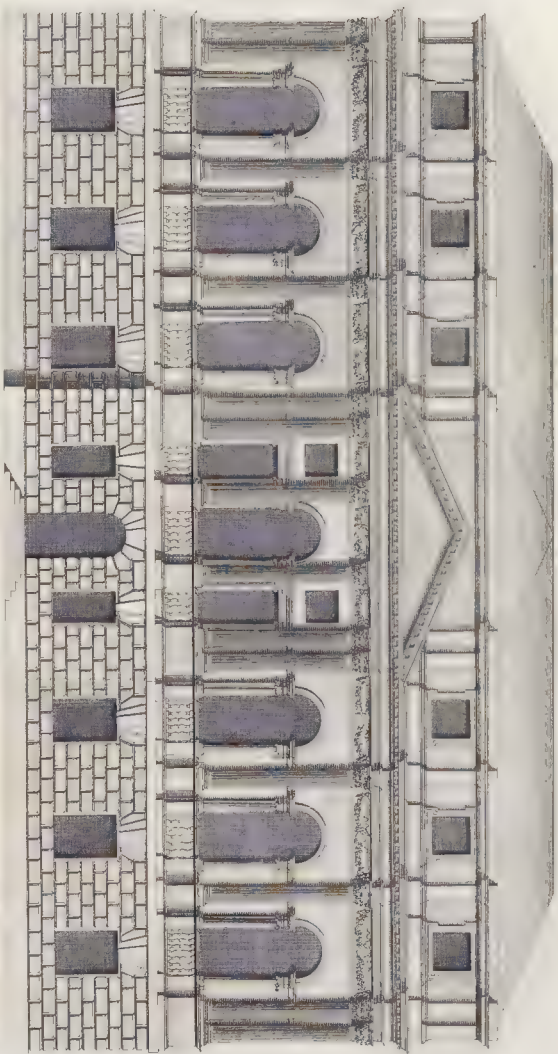
Of the Construction of Elevations upon the true principles of Architecture.

C H A P. I.

Of a Corinthian front.

THE regular course of our work has been preserved without interruption; and it is at the instance of those whom we have most ambition to please, that we here return to the subject of elevations.

It was observed that in those numbers which treated of the Corinthian and Composite fronts we considered that matter in a light more strict and regular than modern practice knows; and we have been desirous to give the usual illustration of that part by designs. The purport of this work is utility; and where we lose sight of that we shall think we write for nothing. The student who has considered the doctrine we laid down for the use of the more rich and elegant orders on that head, and found the practice difficult, shall here have the same universal truths explained by lines, and see in what manner the superior orders are to be used with propriety.



View

View

Architectural drawing of a building facade, showing a series of columns and arches, with a section view on the right.

C H A P. II.

Of accommodating the orders to the building.

WHAT our builders mean by accommodating an order to the place is, the altering its proportions to make it suit the service; or constructing it of parts unsuitable in measure to one another. Something like this the antients have done, but in a manner widely different from ours: they would vary the proportions by small measures, which are not perceived by the common eye, and which the artist views with wonder upon his measure: he does not conceive why, unless like them he can comprehend the whole scheme of the building; but he may see, even without this masterly consideration, that the variations are small; and that they are regular in themselves.

This they have done to their honour: it is on this are founded those variations genius may take the liberty to make in modern work, because they have authority: on this depends the appropriation of the order to the immediate service, and without this all the perfection of regularity and strictness of measure will avoid censure without demanding praise.

In the place of this we see in more modern edifices a very rash and wild liberty taken in the parts of the orders, where the bungling artist does not see how they may be reconciled to the service. He will add or retrench without connection or design; not what the construction of the order will bear, but what the nature of the building requires: he will encrease or diminish one part while the other remains unaltered: and deform the whole to make it suit some purpose which he fancies otherwise impracticable.

This is called accommodating the order to the building; a practice as different from that of the antients which we have named appropriating, as genius from absurdity, science from ignorance.

Their variations, of which we have spoken at large treating of the several works in which their remains are seen, were such as appropriated the column which stood in the front of a building to the whole front: making it a regular part of a regular whole. They were calculated to satisfy the eye of the common observer, and to surprize and charm the more correct and knowing artist. They entertained at once in their minds the whole that would come in view together; and suited one part of it to another, even at the expence of violating those measures of proportion in an order which our correct imitators have held inviolable. Thus it was they appropriated the most elegant of the orders; consulting what was seen and all that was seen; and thus with little freedoms often unperceived till brought to rule and line, they gave that proportion to their works in which subsists the harmony of building.



C H A P. III.

Of the modern practice.

NOW we have seen what the antients did in this way, let us observe with freedom and with justice the practice of the moderns. They take more liberties, and with less reason. As we allow fair praise to their excellencies, let us open the eyes of the student to their defects; which otherwise, because they appear under the sanction of respectable names, may pass for beauties. The comparison with the antients is the true rule of judging, and by this let us acquit or condemn them in these liberties taken with the orders which have been so often practised that they got into authority, and are so seemingly necessary, that they appear therefore excusable.

The occasion of a liberty may sometimes plead in its excuse: nay, we have seen where it turned the bold fault into merit. The antients when they reduced or extended the parts of an order, reconciled it to their own minds by the forms of the other parts of the building which came in view with it. If they shortened the capital, or lengthened the shaft beyond what would have been their practice in the *absolute* construction, they reconciled it to their own minds, when they considered it *relatively* to the other parts: this they would have given for answer if questioned why they had done it; and though we have not their apologies in their writings, their works speak for them. Of all those ancient edifices where enough remains for such consideration, we see at the same time the variation from ordinary rule, and the reason for it: while we observe that the column is not constructed according to the general rule, we perceive also that it suits the rest of the front better than it would have done if it had been so constructed as to answer general measures. Thus whenever we see their variations we see the cause; and add to this we always find them little. On the contrary, in modern practice we see the violent liberties taken in proportioning the parts, and the most inquisitive eye cannot distinguish the reason.

There appear columns whose proper construction and right capital would perfectly have suited the elevation and degree of ornament, but we see the wildnesses of a childish fancy employed instead of that precision which would have arisen from knowledge; and a front where the expence has been sufficient for a great elegance, covered with fantastic forms; a building executed at a time when the science of architecture is well understood, yet sunk into a kind of barbarism; so much the more unpardonable, as the vitiated parts shew he who used them did not want, however he perverted the means of knowledge.

When

When the eye has wearied itself with viewing the whole, and the mind with ^{Chap. 3.} endeavouring to find a reason for the practice, and the observer is reduced to ask of the architect that reason he can no where find in his work; he is answered with a self-sufficient smile this is a *composed* order.

The antients had indeed their composites, but they were of very different construction from these foolish combinations of unlike parts from unconnected orders. But the artist is satisfied with the excuse, and the proprietor, who would have liked Chinese as well, or what we are content to call Gothic, thinks the building very pretty.

Thus the purposes of both are answered; and only the national credit suffers. As the proprietor will not be at the pains to understand architecture, the artist finds it is to no purpose for him to labour to acquire a knowledge of the science; and if questioned more deeply about his work, he will answer with more assurance he will call a vulgar construction of the orders, a running on in the beaten track; and revile it as beneath a man who has any genius of his own: he will justify the construction from the opinion of the common eye, or from his own; and like that Othello who on one of our stages *quenched the rose* and *smelt the candle on the tree*, he will answer those who remind him that he is not strict to the original; that he shall not make it worse.

These are the liberties which offend all judgment, because they are founded upon ignorant fancy. If we are asked whether fancy never is to be indulged, we answer yes: none have prescribed more liberties for it; but it must be a fancy corrected by judgment. The difference between such a one and what we see so often is the same with that between genius and distraction.

Of false reasons for this practice.

BESIDE this variation of members, and introduction of unconnected parts which the builder will dignify with the name of composition; and for absurdity, persuade his no more enlightened hearers that what he did was judgment; beside these flights of whim, we see in our best elevations most egregious disproportion of measure. They are indeed hardened who give the columns ill suited to their capitals, or compose orders by placing the head of one upon the body of another; but in the works of those whom the inattention to elegant studies allows the name of great and masterly, we see violations of measure in the less important parts, which are yet altogether intolerable.

The pedestal is one great subject of these liberties; and they are wholly unpardonable who take them in this instance. Our student has been taught that a pedestal is no essential part of a column; but a kind of adjunct to it: yet, though the use of it be at pleasure, the form and measures, when used, admit of no arbitrary variations. It is in the choice of the architect who designs a column to allow or not to allow it a pedestal; but if he allow it let him strictly follow those rules which have been laid down for its measure and proportion.

The antients have used pedestals, and the modern masters have given from their remains their kinds and proportions. Every order has its own; and if we should laugh at him who introduced into that of an inferior, those ornaments which belonged to the pedestal of a superior order, sure we ought to express more disapprobation against the altering their measures. If those who seeing the reasonableness of an adopted pedestal to each order have given the proportions, have in their own works afterwards violated them in this degree, let the student call in his most disinterested judgment to decide: let him consider things, not names; and let him quote such an author to his own condemnation: if his absolute rules were right, no excuse can have weight in such bold and extravagant violations of them.

When in the front of a noble edifice we see columns of a superior order wrought with all expence, and perhaps in the base, shaft, and capital with truth; and placed on disproportioned pedestals, we are shocked at the absurdity: looking for the reason we find none; not an apology, not a shadow of excuse appears. We recollect what the antients have done, and why they did it: we see their variations small, and we find an absolute and evident reason for them. The columns which make a part of the front must be seen with the whole; the common construction of the

same

same columns would have made them somewhat disproportioned; therefore the judicious architect, keeping at once in his eye the order and the building, has varied the parts of one a little, in order to make it suit the other; and while the whole is thus made more congruous, the change in parts is scarce perceived.

Another great praise of the antients is the regularity and taste with which they wrought these necessary changes in the orders. They have not hurt the elegance or truth of proportion in the whole. Their columns thus altered have been laid down in an absolute sense as rules of beauty and proportion, by those who finding them such, admired them as they were, and never thought of considering them in this relative sense.

On the contrary, our modern changes are violent and absurd; they have no apparent reason in a relative sense, and in an absolute they are monstrous. Look at them in the building and no cause appears for the liberty the architect has taken: considering them alone, and the eye is offended beyond bearing. Yet the artist who has ventured thus far stands unmoved at the censure; he has his reasons he thinks, though they are not seen, and he is as satisfied as if he had done what he knew to be right. The answer is easy: that reasons which do not appear are no reasons. If he would found the variation from propriety and rule upon any cause, it must be upon a visible one; if he would support it upon the practice of the antients, it can only be done the same way; for they had no other reason than what appeared in the face of the building. All they have done shews this, and authority and good sense equally declare this truth, that nothing can be alledged as a cause of variation in an order but what appears with it.

It is in vain the true judge of the science alledges this: in vain reason confirms it. The criminal smiles at the sentence, for he thinks he has a pardon in his pocket: he refers you to the practice of others; he quotes the designs published under great names; and he alledges the necessity of the occasion. The inner construction of a house he tells you is to be considered equally with the outer appearance: that in some particulars they depend upon one another; and that in these instances the disposition of the floors gives him a sufficient excuse.

It is answered already, that only what is seen with the column has any relation to its construction; or can be admitted as excuse. The disposition of the floor is not seen on the outside, nor are the common marks of it unalterable: he therefore errs who supposes the true architect will allow that apology.

C H A P. V.

Of the right practice on these occasions.

IF we are asked what then is the builder to do who finds his pedestals of the order in their true proportions to be incompatible with the fit placing of his floors, we have a short answer. Supposing the case thus stated to be fair, and the necessity what is alledged, the right practice would be to use no order on the outside. We have shewn that elegant and noble edifices may be constructed without columns; and plainness is better than absurdity.

This answer the builder should make to himself, where he fancies there is a necessity of vitiating an order. But we have more to tell him: the necessity is not in nature, but in his imagination. Many things may be accomplished in a science which they cannot conceive who have not sufficiently studied its precepts. There are limitations and imperfections in all the arts, but they are few in comparison of what are imagined; the sciences are more extensive than these men suppose: architecture in particular is fruitful in resources, and for one necessity of deviating from truth that there is in the thing itself, ignorance makes a thousand.

The business in this point is to proportion the pedestal to the column; and yet to dispose the inner part of an edifice to which it belongs in the received and convenient manner. The common builder thinks this impracticable: he supposes this exact obedience to rule on the outside will lift the windows beyond their proper and right place within; and spoil the whole finishing of a room whose several parts must in a great measure be regulated by it. This is a plausible account of things: this he alledges as a reason for breaking in at any rate upon the proportions of the pedestal; and seeing no other method, he alledges this as a necessity.

Indeed the acting otherwise is new, but it is not unpracticable. We shall shew that is not by the plainest designs: and reconcile propriety within and without the building.

On this principle all rests; the pedestal height within need not be the same with that on the outside. This once established, all follows easily: There must in the usual design of finishing be a pedestal at due height within; and the order being raised on its pedestal, it has been supposed these must give the height of one another; but this is no actual, but a meer imaginary necessity. We have said all that is

without must correspond, because it is all seen together; and for the same reason all Chap. 5
that is within the room must also be proportioned: but the necessity ceases when we
consider the inside of the room and the outside of the house together: for the mind
only forms this assemblage, the eye cannot ever take them in view at once.

In the common course of building the outer marks and inner disposition correspond; and it is easy, natural, and fit they should: but in these cases where there is a point of so much importance against it there must be no regard paid to so vague a connection.

We see the outer parts and inner without correspondence where there is less reason: let us by all means give the same liberty where there is greater. A window may be allowed a peculiar decoration in the centre of a front, and yet it may be a necessary part of the light in a principal room: in this case the architect knows how to break the supposed connection of outer and inner parts. He makes the glass-work and its frame the same in measure with the other windows, but disposes his ornaments with all the superior freedom of fancy. This measure, these dimensions alone concern the room within; the ornaments alone concern the form without. There is no correspondence observed between the outer and inner part; yet both suiting the rest of the edifice with which they come in view, each is proper and all is right.

There is nothing impossible in the continuing this thought to the subject before us. Though the disposition of floors we have named be common; it is not of absolute necessity; and the architect has, as we have shewn, the opportunity to vary from this practice, and the means to disguise the variation.

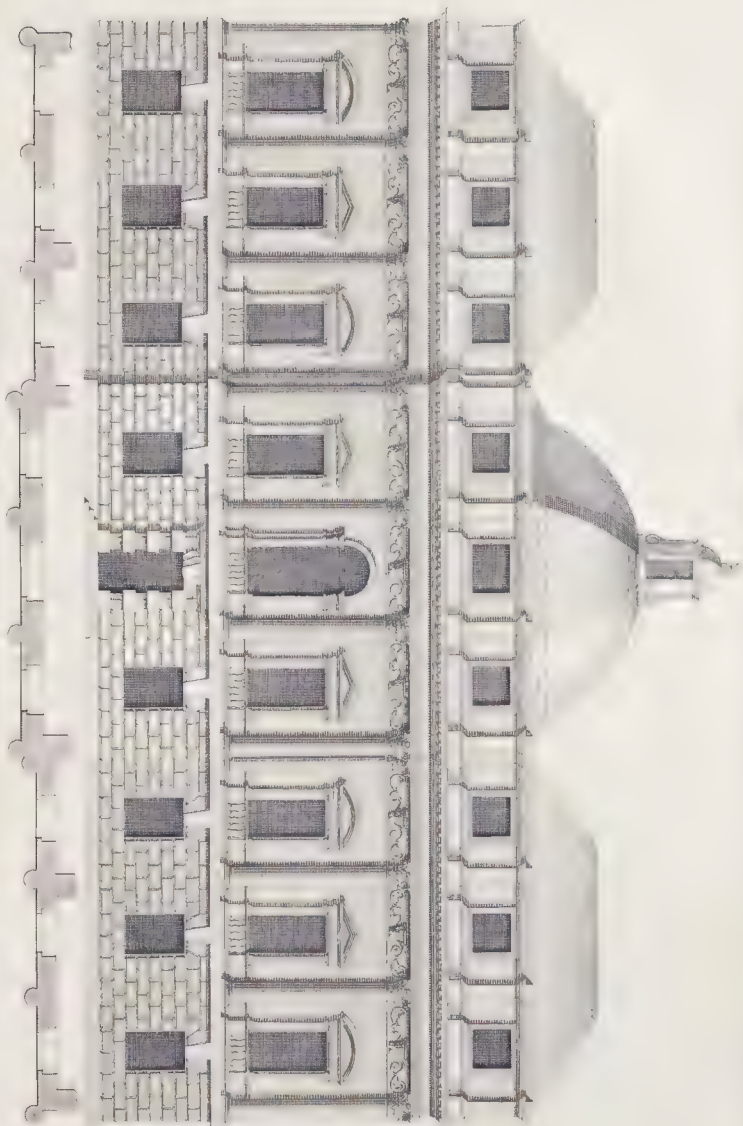
This we have illustrated in the annexed plates. They contain designs in the modern taste justified by all the laws of antient architecture, and adorned with its noblest and most elegant decorations. The outside in these shews a regularity that pleases the common eye and satisfies the most judicious; and it is the same within. All the parts and appendages of the orders are wrought up to rule and measure; and the eye of judgment is pleased to see regularity where he has been too much accustomed to disorder. Hence let him examine within; and he will find the same satisfaction. The parts are suited to common custom, and have their proportions duly observed. Every thing is therefore obtained; and let us examine how? It is by a proper, tho' unusual construction of the inner part; and is done at the expence only of violating an imaginary regularity between that and the outer part of an edifice.

This is a slight sacrifice to the preserving the measures of an order unviolated; and this is all. It is certain the inner and the outer disposition in this case do not agree; but what law of the science says they should? Nothing is found to this purpose in Vitruvius; nothing in the celebrated and inestimable remains of antient architecture. The eye is no where offended, the judgment every where satisfied. There is no real connection between the outer wall and inner division; for the rule is only that all things have a correspondence in measure which can be seen together.

This

Book IX. This is the true method of reconciling that seeming contradiction which has led so many into the error of maiming the proportions of the orders: and to this practice we flatter ourselves future builders will in such instances conform.

If prejudice declare against it the science has nothing to do in that: it concerns the judgment, not the passions of mankind. If those whose obstinacy shall prefer what they know to be wrong should alledge common practice against the plain amendment, they are to be answered, that if this were reasonable, there would be an end of all improvement in the practice, and of all advances in the science of architecture. If they quote against us the greatest names, it may be answered, that they invalidate no part of the system, by shewing no name is so great as to be above the charge of error.



1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24



C H A P. VI.

Of the necessity of the Practice.

WE have observed on many occasions, in treating of the practice of architecture, and the curious eye in viewing the works of architects will have opportunity of observing oftener, that this necessity of preserving the proportions of an order, and the other necessity of adopting the height of the windows to a room very often have occurred together as contradictions: and the builder who has wished to do right has fallen a sacrifice to the seeming irreconcilable contrarieties.

It were well if this censure were limited to modern structures, or to common names. We see it in the works of those who have distinguished themselves by their writings: Perrault, in France, who has so well shewn his knowledge in the rules and everlasting laws of the science in his books, has violated them on this occasion in some of those edifices committed to his care; and even Palladio, to whose established name all praise must be superfluous, has not escaped this cause of censure.

In those preceding numbers of our work where we had occasion to name the use of the Corinthian and composite orders in elevations, we have observed that Palladio himself had sometimes employed them on this occasion in a way not altogether above criticism. The instance we propose to name will shew more than the common transgression of including several stories in the compass of an order; it will explain by a fair comparison the advantage of the method we propose of raising the floor to the proper place, for giving the same height to the cap of the proper pedestal of the order without, and that of the pedestal used in finishing the room within.

We have not an instance in this design of Palladio's, of the difficulty of accommodating the floor of an upper story to the true form of the pedestal of an order, for he raises the order from the ground; but there is no essential difference whether it be above stairs or below that this necessity is incurred; and the fact is very striking.

This great master, who knew the strict observance necessary to the laws of the science in so conspicuous a use of an order, when he proposed including within the measure of its height the several stories, saw the immediate propriety of raising the pilasters on their pedestal.

The student knows that the law of these is the same which regulates columns of the same order, and that it must be observed as strictly. In treating the art therefore in theory the terms are indifferent; for all that regards them as orders is the same.

BOOK IX. THE LESSON which should follow, is, that the difference in the respect between columns raised from their base, and set upon their pedestal is very great. The thickness of the shaft regulated entirely by the height of the column must be very different when so much was added to that length, as might be taken off by allowing it a pedestal. It was therefore Palladio added that ornament in this place: and thus the student in the science should review and consider his works. Any one who can use his rule and compass can tell what Palladio has done on such an occasion; but knowing this he has but half his lesson: it remains to find why he did it. This compleats the use of his designs as models for future works; and this is the difference between the builder and the architect: the one is the work of the hands, the other of the mind; one is mechanical, the other the effect of genius.

C H A P. VII.

The conduct of Palladio in this instance.

THE reader sees what were Palladio's reasons for raising the order on its pedestal in this elevation; and he will see in the construction of the whole that inviolable attachment the great master of the moderns shewed to the laws of Vitruvius, and to the rules established in the works of those chaste Greeks and daring early Romans, on whose then remaining edifices they were established. He will find the pedestal bears its true proportion to the shaft, and that the whole order is wrought with that delicacy and judgment which reign in his other works; but he will see that contradiction within which is the subject of our present enquiry; and he will be surprized to find how ill that great man managed this part of the structure.

[To lay the whole before the reader's eye in the plainest manner, we shall annex here, after our third Corinthian elevation, a sketch of that building in the great architect's own measure. In his works there are two representations of it, one on a small scale entire, the other a half only on a larger. We shall give the whole in a moderate size for the more ready judgment of our student.

He will see, that in accommodating the measures to the laws of the science without, he has strangely disturbed the proportions that should have been observed within.

The cap of the pedestal is, as it always must be, the base of the window. This has no ill appearance in the elevation as viewed from without; but the greatest inconvenience must attend it within. The windows of the ground-floor are indeed raised by it higher from the level of the surface than is usual in houses built upon that

level; but there is an evident air of propriety and regularity in it, which reconciles the eye to what it fees uncommon.

Chap. 12.

This that great master perfectly knew would be the case. He therefore was at no pains to alter the place of the windows on that account; but when we see the opening on a level with the surface, and the floor continued from it on the same plane, we cannot but be sensible that within doors there must be strange impropriety. In this case the keeping the measure of the pedestal unviolated without, and constructing the rooms within upon the common principle, occasions the windows which are regular on the outside to be so high within, that it is impossible to look out at them.

Every one must perceive that the rooms upon the lower floor in that house must be strange in the highest degree: prisons, enlightened dungeons, whose windows serve only one of the two purposes of those openings; for in all houses properly constructed the windows serve for the enlightening the apartment, and giving a view of things without.

C H A P. VIII.

Of the height of windows.

THIS extrem is the worse, because the common construction of our rooms is deficient in this particular; and all our windows would be more agreeable if they came lower.

The purpose of looking out cannot be obtained but by sitting in them, or standing up to look through them. It would be much more pleasing that the company as they sat in the usual places should see before them, whether it were the fields, the garden, or the street.

This may be done without transgressing the rules of science; and we see it done often in the neighbouring countries; and sometimes here.

In France it is no unusual thing to bring the windows down to the level of the floor, and to run a brass rail before them to keep off feet, and prevent accidents.

This is not the perfect method, for in nothing is perfection obtained at once; the rail is awkward: it cannot be considered as any proper part of the finishing or furniture of the room. It resembles those coarse contrivances to keep children out of the fire, and in that sprightly nation a man is often thrown by it upon the window.

The

Book IX. The propriety would be to bring down the windows so far that the command of the prospect should be within the reach of the eye sitting, and no lower. The rest is unuseful, and the lowest part most offensive. Less than is commonly thought would answer this purpose; and in the Corinthian front before given the reader will see a method of doing it on all occasions.

That article of accommodating the inner construction to the measures of an outer order, is the most difficult that can occur on this occasion; and we have shewn how it is to be regulated. The same method which will succeed in the most difficult cannot fail to answer in that which is less so; and the student will on the same principle find it easy to manage the lesser appropriation.

In regard to this edifice of Palladio's, we have shewn in what it is plainly defective; and though it be an unprecedented presumption to say what would be better in Paladian structures, we shall venture so far as to observe, that if the English artist should chuse to erect an edifice upon the same principles, he would do well to accommodate the inner and outer parts of this lower floor, according to the principles laid down in our first floor of the Corinthian, in which we have explained this Doctrine.

What we say does not amount to the liberty of finding fault with what that great master has done in this instance. We do not know the use to which those lower rooms were put by the noble proprietor of the building; or for which they were intended. We know what would be their use in this country; and as we see the propriety of placing the windows so as to admit the common use of looking out at them, and seeing through them: we also know in what manner the floor may be placed to give these advantages; while all the propriety and exactness of method is observed without.





C H A P. VIII.

Of farther improvements.

THE practical reader will not be displeased that we have dwelt so long upon this subject: it is new, and it is highly useful. We see that the greatest men have been perplexed by the necessity, and that their works, far from setting the student in the right way of remedying, rather countenance the error. He looks upon these as lawgivers, against whose determinations there is no appeal; but this limits the science to the degree of perfection it knew in their time, and places bounds to the human genius. This we have throughout declared to be wrong: the science of architecture is not exhausted, and genius is inexhaustible.

We have traced architecture from its origin, and explained its parts; composed of them the structures they were intended to form; and we hope have left in the mind of the attentive reader no article obscure, nor any part of the practice unexemplified.

Beside the common forms we wish him to employ his genius in invention. It is this will give him praise; this will raise him to the character of an original; and that is the reputation he should labour to acquire.

Let him be bold in remedying the defects of the science; for he sees by what we have taken the liberty of saying on many occasions, that there are yet many.

Every country has its own peculiar character; and to this its buildings must be made subservient. Were there no more than that it would give room for study and improvement; and there would result from this an air of novelty, and the credit of original science.

The buildings of Greece and Italy, though in general excellent models, are not to be understood as strict patterns for us. The temples of their gods will not suit our more perfect worship; and that race of men to whom they raised triumphal arches is now extinct. One source of their elegance is cut off from us, and another requires great art in the accommodation.

The structures of modern Italy more familiarized by use, and more near the customs of our country, yet are those of a people whose form of worship is different from ours, though the object be the same; and whose climate induces as necessary a deviation in copying their works here as the ceremonies of their religion.

Book IX. Our churches may bear the same exterior form with theirs; but the altars of their saints scarceless numerous, or in many instances less absurd than the deities of pagan worship, have no place in our pure communion.

With these restrictions must the British Architect form his designs upon those of modern Rome, in great and sacred buildings; nor is less required in the common houses. The bright sky of Italy is very different from the foggy air of this island: and we have observed before, that it requires consideration to adapt the measures, in him who copys buildings from thence.

A smaller aperture admits light enough where the light is itself stronger and less encumbered; and one rule of these parts may hold where the whole year affords the same degree of light, or nearly so: with us the builder, who should calculate nicely his proportion of light for a bright day in summer, would shut up the inhabitants more than half the year in dungeons. Our houses a century ago were too light, and the best built are now too dark. Thick walls with their broad, plain sides contribute to darken the room into which too little light is originally admitted; and it is not the shelving off the angle that will make the due atonement. It will be necessary to enter upon a new calculation on these occasions; and even where there are no errors in the Italian structure, yet to adapt it to the service of the country where it is to be raised.

C H A P. IX.

Of retrenching errors.

IF this be the case where the designs are most correct and unexceptionable, much more must it be so where they are liable to exception.

The Custom among English architects has been to observe these too implicitly. To transfer the buildings of Italy right or wrong, suited or unsuited to the purpose, into England; and this, if done exactly, the builder has been taught to consider as merit in his profession. We have pointed out to him a worthier and better plan; let him study those designs, but with some regard to his own Genius. It is not in these he learns the rudiments of the science, though he sees the rules by which he has been taught exemplified in them: let him therefore read with more freedom, and regard these structures as they are, as works of great men, but of men: the greatest are not out of the reach of error, nor above improvement.

It was thus the antients studied one another: and thus the science became improved; thus Vitruvius formed his principles; and thus Palladio followed them. The Roman laid down rules which he illustrated by examples; but he did not suppose every thing he saw in the old buildings worthy to be made the principle of a maxim added to the science: and the Italian has shewn in many of his edifices that, altho'

he

he held his master in high reverence, he did not esteem him above error; or think Chap. 5.
he carried the science beyond improvement.

In studying a design of Palladio's, which which we recommend to the young architect as his frequent practice, let him think, as well as measure. Let him consider the general design and purpose of the building, and then examine freely how far, according to his own judgment, the purpose will be answered by that structure. He will thus establish in himself a custom of judging by the whole as well as by parts; and he will find new beauties in the structure considered in this light.

He will improve his knowledge and correct his taste by such contemplation; for he will find how greatly the designer thought, and how judiciously he has done many things; which, but for such an examination, would have passed in his mind unnoticed; or at best not understood.

Possibly, when he has thus made himself a master of the author or designer's idea, he will see wherein it might have been improved. Now that he understands the work, he will have a right to judge thus: and what would have been absurdity in one who knew not the science, or presumption in such as had not enough considered the building, will be in him the candid and free use of that knowledge he has attained in the art.

Therefore let him never check these sallies of his fancy; but with due candour, and a modest sense of his own rank in the science, compared with his whose work he studies, let him indulge them freely. Let him consider himself as a dwarf placed upon the giant Palladio's shoulders; as seeing not with his own eyes singly, but with the borrowed light of that great master's; and thus indulge his genius.

Let him commit to paper his thoughts on these subjects; not in words only, but in lines and figures. He will be able to reconsider them at leisure; and thence adopting or condemning his first thought, he will either way improve his judgment, and probably introduce new excellences in his practice.

Of the method of studying the writers on architecture.

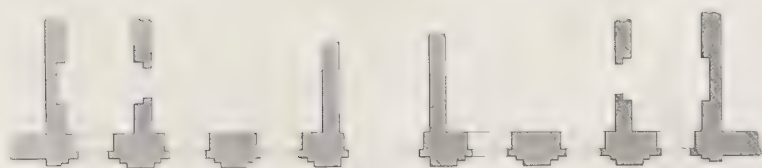
THIS is the plan upon which he who deserves the title of an architect will study the works of others of that character: thus he will consider the structure entire, and by the same strict rules he will judge of the several parts. But let the student remember that it is after he has made himself a master of the theory of the science, that he takes these liberties (even supposing them confined to his own mind) with those who have made themselves immortal by the practice. The world is in a state of improved knowledge, and every one to whom he takes upon him to speak on such a subject will be able to judge whether these freedoms be the result of fancy or of knowledge. No contempt can be greater than that which will attend him who censures Palladio's works before he has read those principles of Vitruvius on which they are established; no honour too great for him who having read and understood those rules, remarks upon that practice with a modest freedom. He who proceeds thus sets himself upon a level with the great Italian in the knowledge of the science, before he presumes to consider the works which shew his genius; and while he will allow that great man his due praise, yet name his imperfections, he will shew that he is able to make the true use of what he has left us. Such a student will know how to transfer the structures of one country to another; where necessity and the difference of climate compel him to alter, and what his genius may induce him to improve.

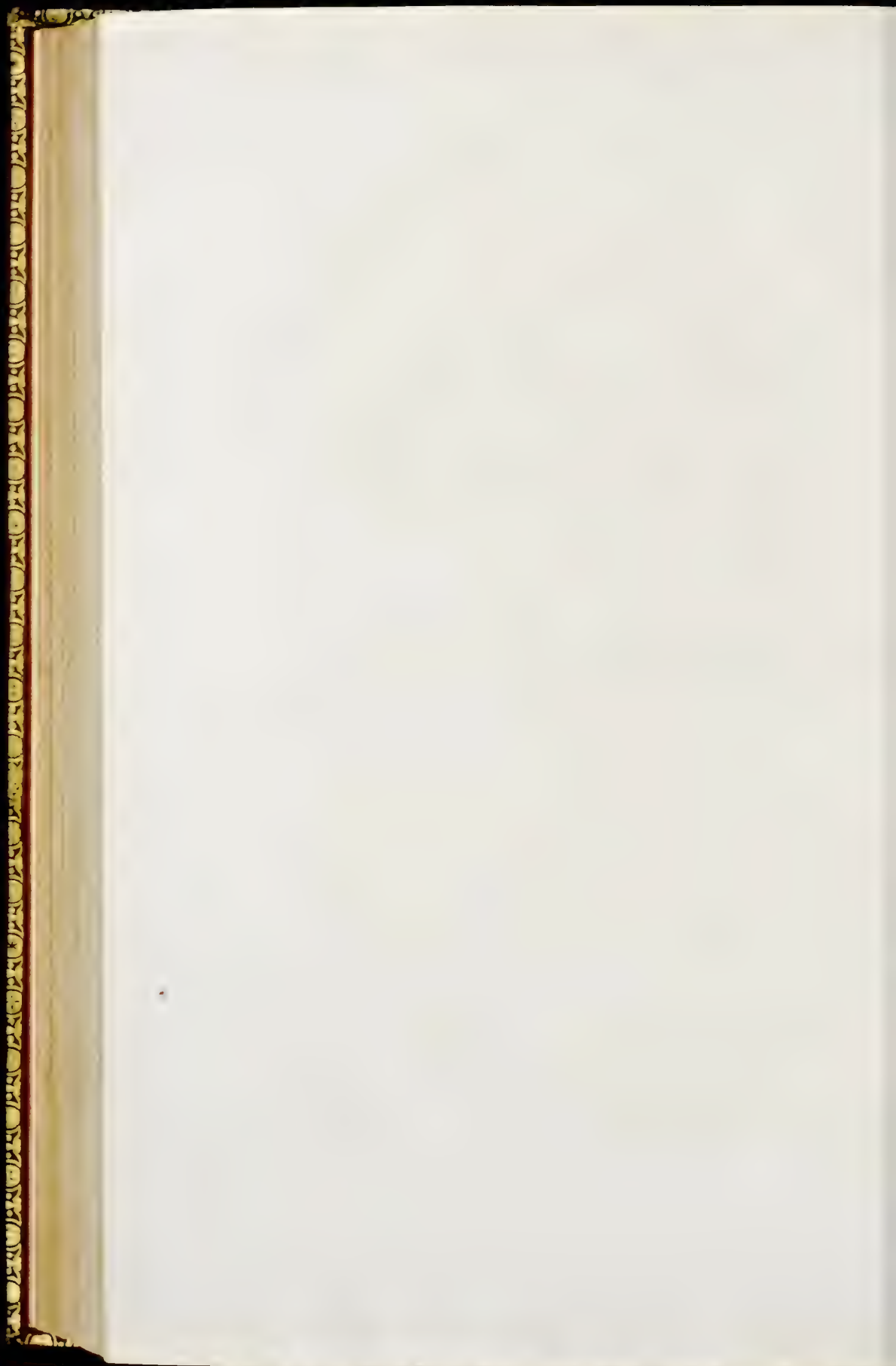
This he may do, but this such as he alone can: to others the practice of that great man must be sacred; because it is supported by his character, and superior to their understanding.

Vitruvius has no obscurity to those who consult those remains on which he built his principles; nor will there be a beauty or an imperfection in the works of Palladio hid from him who first has understood that writer, and formed upon his rules a judgment of the science.

We now write to an established architect, for he who has gone through this work and cannot assume that character has read to little purpose; and to him we shall observe, that Desgodets furnishes the best comment on Vitruvius; and that Palladio should be judged by those rules on which he is known to have established his practice.

Thus considered, they will both afford, beside the common fund of knowledge, new lights to the subject: the architect will be able to select from both without copying either; and to accommodate in such manner the parts to their offices, that the whole shall be his own, while things beyond invention are known to be borrowed; and he shall have, and shall deserve the credit of novelty, where there is nothing but what may be supported by the remains of antiquity, the writings of the great Roman, and the works of the no less great Italian architect.





B O O K X.

Of the Sciences and arts subservient to Architecture.

I N T R O D U C T I O N.

THAT the student may be left unacquainted with nothing which can be needful in the study of architecture, we subjoin to the general rules for its practice, the assistant arts, arithmetic, geometry, perspective, and mensuration; with the prices of the several works, as charged by persons of skill and integrity at this time.

The proficient will pardon us, that for the sake of those who are less instructed we give first a succinct system of Arithmetick: to such, though not to him, it will be necessary; and he will acknowledge that this work could not be compleat without it. Our tables of mensuration cannot be used without a knowledge of this first useful art; and we have therefore, with this apology to those who are above the want of such assistance, devoted to that article a few pages.

C H A P. I.

A system of Arithmetick.

I. A D D I T I O N.

ADDITION is that, by which several numbers are collected together, to the end that their sum, aggregate or total, may be discovered.

To add one one thousand seven hundred and thirty-one, to five thousand four hundred and thirty-two.

$$\begin{array}{r} \text{Set the sums in figures thus,} \\ 5432 \\ 1731 \\ \hline 7163 \end{array}$$

Draw a line under them, and begin at the place of unites, which is the first figure on the right-hand, say one and two make three: set the three down underneath in the place of unites. Three and three make six, set the six down in the place of tens; seven and four make eleven, set down one in the place of hundreds, and carry one to the next place of thousands, say, one I carry'd, and one, is two, and five make seven, which set down, and then you will find the sum required to be seven thousand one hundred and sixty-three.

Book X.

To find the sum of the following numbers added together, viz. nine hundred eighty-seven millions, six hundred fifty-four thousand, three hundred and twenty-one; eighty-seven millions, six hundred and fifty-four thousand, three hundred and twenty-one; seven millions, six hundred fifty-four thousand, three hundred and twenty-one; six hundred fifty-four thousand, three hundred and twenty-one; fifty-four thousand, three hundred and twenty-one; four thousand, three hundred and twenty-one; three hundred and twenty-one; twenty-one; and one; or unite.

Set the sums under one another as before; the unites under unites, the tens under tens, and the hundreds, thousands, tens of thousands, &c. in their proper places: thus, viz. nine hundred and eighty-seven millions, six hundred fifty-four thousand, &c. then eighty-seven millions, &c. and so on till you have set down all the sums: draw a line under them, and begin at the place of unites, as before.

| |
|------------|
| 987654321 |
| 87654321 |
| 7654321 |
| 654321 |
| 54321 |
| 4321 |
| 321 |
| 21 |
| 1 |
| 1103676269 |

To add 36 pounds 10 shillings and one penny, to 41 Pounds 5 Shillings and 6 pence three farthings.

Set down thus, and add them together

| | | |
|----|----|-----------------|
| l. | s. | d. |
| 36 | 10 | 1 |
| 41 | 5 | 6 $\frac{3}{4}$ |

This must be done in the manner as the foregoing examples, with this difference only, that every fourth farthing must be carried to the pence, and every twelfth penny to the shillings, and every twentieth shilling to the pounds; there being in this but 3 in the farthings, 7 in the pence, and 15 in the shillings, nothing can be carried from one denomination to the other, and therefore the 3-4ths or 3 farthings must be set down under the farthings; then go to the pence, and say 6 and 1 makes 7, set that down under the Pence; then go to the shillings, and say 5 and 10 is 15, which must be set under the shillings; then in the pounds say 1 and 6 is 7 and 4 and 3 is 7, which being set down makes the sum total seventy-seven pounds fifteen shillings and seven pence three farthings.

To add three miles six furlongs ten poles and eleven feet, to forty-one miles five furlongs thirty-three poles and ten feet.

Set down the miles, &c. as in the margin, and add them together as before, only observing that every 16 foot and a half, which is the length of a pole or perch, must be carried to the poles, and every 40th pole to the furlongs, and every 8th furlong to the miles. Begin then and say, 11 and 10 is 21, out of which if you take 16 foot $\frac{1}{2}$ there remains 4 foot $\frac{1}{2}$, which must be

| | | | |
|-------|-------|-------|------------------|
| Miles | Furl. | Poles | Feet |
| 41 | 5 | 33 | 10 |
| 03 | 6 | 10 | 11 |
| 45 | 4 | 04 | 04 $\frac{1}{2}$ |

set down as you see in the example, and carry 1 to the Poles, and say 1 and 10 is 11 and 33 is 44, out of which you must take 40 and set down the remainder which is 4, and carry 1 to the furlongs, and say 1 and 6 is 7 and 5 is 12, out of which you must take 8 and set down the remainder, which is 4, then carry 1 to the miles and say, 1 and 3 is 4 and 1 is 5, set that down, and say 4 is 4, which likewise set down, and then the sum of both will be 45 Miles 4 furlongs 4 poles and 4 feet $\frac{1}{2}$.

Let it be required to add sixteen acres three roods and twenty-seven rods or ^{Chap. 1.} perches to thirty-six acres one rood and eleven perches.

Set down the acres and roods, &c. and add them together as in the other examples, only remembering that 40 perches or poles makes a rood or one quarter of an acre, and that 4 roods make an acre, which must be carried to their several denominations as before, and this is a constant rule in all examples of Addition of mixed numbers.

Acres. Roods Perches

| | | |
|-------|---|----|
| 36 | 1 | 31 |
| 16 | 3 | 27 |
| <hr/> | | |
| 53 | 1 | 18 |

To add the several under-written dimensions together, viz. one hundred and six feet eleven inches and one quarter, forty-nine feet ten inches and three quarters, ninety-seven feet and seven twelfths of an inch, one hundred and forty-three feet and eleven twelfths or parts of an inch, and fifty-nine feet four inches and a half.

In this example the inches are supposed to be divided into twelve parts, and that when the dimension happens to be one quarter, or one half, or three quarters, the parts will be 3, 6, and 9; that is to say, 3 for one quarter, 6 for one half, and 9 for three quarters.

Set down the several dimensions one under another, and add them up together as before, and divide the parts by 12, as well as the inches. In the parts the number is 36, which being divided by 12, the Quotient will be 3, and nothing remain, therefore set down 0 underneath the parts, and carry the 3 to the inches, and say 3 and 4 is 7 and 10 is 17, &c. till the whole is added up, making in all 38, which being divided by 12, the quotient will be 3, and the remainder 2, which must be set down, and the 3 carried to the feet, and added up with them, as in whole numbers, &c.

Feet Inches Parts

| | | |
|-------|----|----|
| 106 | 11 | 03 |
| 049 | 10 | 09 |
| 097 | 00 | 07 |
| 143 | 10 | 11 |
| 059 | 04 | 06 |
| <hr/> | | |
| 457 | 02 | 00 |

2. SUBTRACTION.

Subtraction is that by which one number is taken out of another, that the remainder or difference between the two may be known.

To subtract from one hundred forty-five pounds, or one hundred forty-five yards or feet, &c. ninety-three pounds, yards, or feet, &c.

Set the sums in figures the same as you did in addition thus,

| |
|-------|
| 145 |
| 93 |
| <hr/> |
| 52 |

then begin at the place of unites, and say 3 from 5 and there remains 2; set down the 2, and then say 9 from 4 I cannot, but 9 from 14 and there remains 5; that being set down makes the remainder 52.

Bought

Book X. Bought eight thousand five hundred and sixty-seven load or feet of timber, stone, or other materials, &c. out of which you have used or sold seven thousand six hundred thirty-nine Loads or Feet, &c. the question is, what remains?

Set the sums as before, then begin at the place of unites, and say 9 from 7 I cannot; therefore borrow 10, add it to the upper number, which is 7, and say 10 and 7 is 17, out of which you take the 9, 9 from 17 and there remains 8, which set down, and say 1 that I borrowed and 3 is 4, 4 from 6 there remains 2, which set down, and say 6 from 5 I cannot, but 6 from 15 and there remains 9, which set down, and say 7 and 1 that I borrowed is 8, and 8 from 8 remains nothing, which you may set down and describe by a 0 or cypher, or let it alone as you please, the remainder will then be nine hundred and twenty-eight.

8567

7639

0928

To take sixteen acres three roods and thirty-seven perches, from thirty-six acres one rood and twenty-one perches.

Set the sum down and subtract in the same manner as you have done before, only allowing for the difference of the quantities in the several denominations which you must take care to remember; therefore say, 37 from 21 I cannot, but 37 from 1 rood or 40 perches that I borrowed, and there remains 3, which remainder must always be added to the upper number; then say, 3 and 21 makes 24, which set down and carry 1 that you borrowed to the roods, and say 1 and 3 makes 4, which from 1 I cannot, but 4 from 1 acre or 4 roods that I borrow there remains 0 or nothing, which 0 or nothing being added to 1 the upper number is but 1, set that down and carry the 1 acre you borrowed to the acres, and say 1 and 6 is 7, which from 6 you cannot, but 7 from 16 there remains 9, set that down and say, 1 and 1 that I borrowed is 2, and 2 from 3 remains 1, that being set down finishes the sum.

| | <i>Acres</i> | <i>Roods</i> | <i>Perches</i> |
|---------|--------------|--------------|----------------|
| from | 36 | 1 | 21 |
| take | 16 | 3 | 37 |
| remains | 19 | 1 | 24 |

To take or subtract five years two quarters eleven weeks four days seventeen hours and fifty-two minutes, from twenty-one years three quarters nine weeks five days twenty-three hours and thirteen minutes.

Set down the sums or quantities as usual, the lesser under the greater, and in subtracting observe the method already shewn, which I hope is sufficient, and then you will find the remainder to be sixteen years eleven weeks one day five hours and twenty-one minutes.

| | <i>Years</i> | <i>Qrs.</i> | <i>Weeks</i> | <i>Days</i> | <i>Hours</i> | <i>Mn.</i> |
|---------|--------------|-------------|--------------|-------------|--------------|------------|
| from | 21 | 03 | 09 | 05 | 23 | 13 |
| take | 05 | 02 | 11 | 04 | 17 | 52 |
| remains | 16 | 00 | 11 | 01 | 05 | 21 |

3. MULTIPLICATION.

Multiplication teaches how by two numbers given to find a third, which shall contain either of those numbers so many times, as the other contains 1 or unity.

The T A B L E.

| | | | | | | | |
|------------------------|--|-------------------------|--|-----------------|---|---------------|---|
| twice
or
2 times | $\left\{ \begin{array}{l} 2 \text{ is } 4 \\ 3 \text{ is } 6 \\ 4 \text{ is } 8 \\ 5 \text{ is } 10 \\ 6 \text{ is } 12 \\ 7 \text{ is } 14 \\ 8 \text{ is } 16 \\ 9 \text{ is } 18 \\ 10 \text{ is } 20 \\ 11 \text{ is } 22 \\ 12 \text{ is } 24 \end{array} \right\}$ | thrice
or
3 times | $\left\{ \begin{array}{l} 3 \text{ is } 9 \\ 4 \text{ is } 12 \\ 5 \text{ is } 15 \\ 6 \text{ is } 18 \\ 7 \text{ is } 21 \\ 8 \text{ is } 24 \\ 9 \text{ is } 27 \\ 10 \text{ is } 30 \\ 11 \text{ is } 33 \\ 12 \text{ is } 36 \end{array} \right\}$ | four
times | $\left\{ \begin{array}{l} 4 \text{ is } 16 \\ 5 \text{ is } 20 \\ 6 \text{ is } 24 \\ 7 \text{ is } 28 \\ 8 \text{ is } 32 \\ 9 \text{ is } 36 \\ 10 \text{ is } 40 \\ 11 \text{ is } 44 \\ 12 \text{ is } 48 \end{array} \right\}$ | five
times | $\left\{ \begin{array}{l} 5 \text{ is } 25 \\ 6 \text{ is } 30 \\ 7 \text{ is } 35 \\ 8 \text{ is } 40 \\ 9 \text{ is } 45 \\ 10 \text{ is } 50 \\ 11 \text{ is } 55 \\ 12 \text{ is } 60 \end{array} \right\}$ |
| six
times | $\left\{ \begin{array}{l} 6 \text{ is } 36 \\ 7 \text{ is } 42 \\ 8 \text{ is } 48 \\ 9 \text{ is } 54 \\ 10 \text{ is } 60 \\ 11 \text{ is } 66 \\ 12 \text{ is } 72 \end{array} \right\}$ | seven
times | $\left\{ \begin{array}{l} 7 \text{ is } 49 \\ 8 \text{ is } 56 \\ 9 \text{ is } 63 \\ 10 \text{ is } 70 \\ 11 \text{ is } 77 \\ 12 \text{ is } 84 \end{array} \right\}$ | eight
times | $\left\{ \begin{array}{l} 8 \text{ is } 64 \\ 9 \text{ is } 72 \\ 10 \text{ is } 80 \\ 11 \text{ is } 88 \\ 12 \text{ is } 96 \end{array} \right\}$ | nine
times | $\left\{ \begin{array}{l} 9 \text{ is } 81 \\ 10 \text{ is } 90 \\ 11 \text{ is } 99 \\ 12 \text{ is } 108 \end{array} \right\}$ |
| ten
times | $\left\{ \begin{array}{l} 10 \text{ is } 100 \\ 11 \text{ is } 110 \\ 12 \text{ is } 120 \end{array} \right\}$ | eleven
times | $\left\{ \begin{array}{l} 11 \text{ is } 121 \\ 12 \text{ is } 132 \end{array} \right\}$ | twelve
times | $\left\{ \begin{array}{l} 12 \text{ is } 144 \end{array} \right\}$ | | |

To multiply one hundred and thirty-four by two three, four, and five.

Set down the sums thus,

| | | | |
|-----|-----|-----|-----|
| 134 | 134 | 134 | 134 |
| 2 | 3 | 4 | 5 |
| 268 | 402 | 536 | 670 |

Then say twice 4 is 8, set down the 8 in the place of unites, then twice 3 is 6, which likewise set down in the place of tens, then twice 1 is 2, set down the 2 in the place of hundreds; begin the next multiplication by 3, and say 3 times 4 is 12, set down the 2 and carry 1 to the next figure on the left hand, and say 3 times 3 is 9 and 1 that I carry'd is 10, set down the 0 or cypher and carry one to the next place, and say 3 times 1 is 3 and 1 that I carry'd is 4, which set down; then begin the next multiplication and say 4 times 4 is 16, and so on as you have already done in the foregoing sums, till you have finished, and then you will find the product to be, in the first sum two hundred and sixty-eight, in the second four hundred and two, in the third five hundred and thirty-six, and in the fourth six hundred and seventy.

To multiply 5107 by 210, and also to multiply the product which is 1072470 by 59, and again to multiply that product, which is 63275730 by 1795.

N^o 75.

8 Q

Set

A COMPLETE BODY

Set down the dimensions or sums thus,
 and say nought times 7 is nothing, nought times nought is nothing,
 nought times 1 is 0 or nothing, and 0 times 5 is nothing, which
 set down by 0000; then say once 7 is 7, once nought is nought,
 once 1 is 1, and once 5 is 5, which set down in the same man-
 ner as before; then say twice 7 is 14, set down the 4 and carry
 1, and say twice 0 or nought is nought, but 1 that I carry'd is 1,
 which set down; then say twice 1 is 2, and twice 5 is 10, set
 down the 2 and the 10 as in the example; then add or cast up
 the sums as you have been already shewn, and you will find the
 product to be one million seventy-two thousand four hundred
 and seventy, which product multiplied by 59, produces sixty-
 three millions, two hundred seventy-five thousand, seven hundred
 and thirty; that product again multiplied by the third number
 proposed, makes the sum total one hundred and thirteen thousand five hundred
 and seventy-nine millions, nine hundred and thirty-five thousand, three hundred
 and fifty.

To multiply twelve feet six inches, by six feet nine inches.

Before you begin to multiply this it will be necessary to you to know division,
 the next rule, and you are also to know, that feet multiplied by feet produce feet;
 feet multiplied by inches and divided by 12 produce feet and inches; inches mul-
 tiplied by inches and divided by 12 produce inches and first parts, or first parts of
 inches; the first parts of inches multiplied by feet and divided by 12 produce
 inches and first parts; first parts multiplied by inches and divided by 12 pro-
 duce first and second parts; and lastly, first parts multiplied by
 first parts and divided by 12 produce second and third: This
 being well understood, the working of the sums or dimensions
 will be very easy; therefore set down the sum or dimension re-
 quired as in the margin, then multiply the feet by the feet,
 which makes 72, set down the 72 underneath the feet, then
 multiply the lower feet by the upper inches as you see it marked,
 and the upper feet multiply by the lower inches, and first mul-
 tiply the lower feet by the upper inches, saying 6 times 6 is
 36, which being (according to the above rule) divided by 12
 makes just 3 feet 0 inches remaining, set down the 3 under
 the feet, and say 9 times 12 is 108, that divided by 12 produces
 9 feet, which likewise set down under the feet, then multiply the inches by the
 inches, saying 6 times 9 is 54, which being divided by 12 makes 4 inches and $\frac{6}{12}$
 or 6 parts, set that down as in the example, and add up the particulars.

Feet Inches

| | | |
|----|------|--|
| 12 | 06 | |
| 6 | 09 | |
| | | |
| 72 | | |
| 3 | 00 | |
| 9 | 00 | |
| 64 | 6 | |
| | | |
| 84 | 04 6 | |

4. DIVISION.

DIVISION is that by which we discover how often one number is contained in
 another; or (which is the same) it shews how to divide a number proposed,
 into as many equal parts as you please.

To know how many times two there is in ninety-six, and how many times three,
 four and five there is in the same sum.

Set the sums down thus,

| Divisor | Dividend | Quotient |
|---------|----------|----------|
| 2) 96 | (48 | 3) 96 |
| 8 | 8 | 9 |
| 16 | 16 | 16 |
| 16 | 16 | 16 |
| 00 | 00 | 00 |

and call the number you divide by the divisor, the number which is to be divided, the dividend, and the third number (being so many times the divisor in the dividend) the quotient; then say how many times 2 can I have in 9, which you may easily find to be 4 times, therefore set down the 4 in the quotient, and say 4 times 2 is 8, set the 8 under the 9, then subtract, and say 8 from 9 and there remains 1, set that down, and then make a dot or prick under the 6, to signify that you have brought down the 6 to the 1, to make a new dividend, which is a rule you must always strictly observe; then say how many times 2 is there in 16, which you will find to be 8, set the 8 down in the quotient, and say 8 times 2 is 16, set the 16 down underneath, and subtract as you did before, and you will find the remainder to be 0 or nothing; so that you have 48 times 2 in 96. Now to know how many times 3, 4 and 5 there is in 96, you must begin again, and say the threes in 9 are 3 times, which must be set down in the quotient, as in the Example, and say 3 times 3 is 9, set the 9 down under the 9 in the dividend, and subtract as before, and bring down the 6 for a new dividend, &c. as in the first example, till you have done all the sums or questions as above, and then you will find there is 48 times 3, 32 times 2, 24 times 4, and 19 times 5, and 1 remaining, in the above said sum 96.

To divide nine hundred and eighty-seven millions, six hundred fifty-four thousand, three hundred and twenty-one, by five hundred and forty-three, which is to know how many five hundreds and forty-threes there is in the above said sum of nine hundred and eighty-seven millions, &c.

Set down the example in figures thus,

then say how many times 543 can I have in 987 (the three first figures of the dividend) which can be but once, for twice 543 makes 1086, which is more than the 987, therefore you must set the 1 down in the quotient, and say once 3 is 3, once 4 is 4, once 5 is 5, which set down as you see in the example, then subtract, and 3 from 7 and there remains 4, set that down, then say 4 from 8 and there remains 4, set that down, and lastly, say 5 from 9 and there remains 4, set that down likewise, then make a prick or point under the 6, to signify that you have brought it down to the new dividend, which will then be 4446, then try how many times 543 you can have in 4446, or, which is easier, say how many times 5 the first figure towards the left-hand in the divisor, can I have in 44, which you will find to be 8, set down the 8 in the quotient, and multiply the divisor by it, and say 8 times 3 is 24, set down 4 under the new dividend, and carry 2, and say 8 times 4 is 32, and 2 that I carried is 34, set down the 4 and carry 3, and say 8 times 5 is 40, and 3 that I carried is 43, which set down, and subtract that sum out of the dividend as before, then bring down 5, the

$$\begin{array}{r}
 543 \overline{) 987654321} (1818884 \\
 \underline{543} 543 \\
 4446 5456652 \\
 \underline{4344} 7275536 \\
 \underline{ 9094420} \\
 1025 \\
 \underline{543} 987654012 \\
 309 \\
 \underline{4824} \\
 4344 987654321 \\
 4803 \\
 4344 \\
 4592 \\
 4344 \\
 2481 \\
 2172 \\
 309
 \end{array}$$

next

A COMPLETE BODY

next figure in the dividend, which will make you a new dividend, and this method must be continued till you have brought down all the figures in the first dividend, always remembering to make a dot or prick at the figure when you bring it down, and also to observe, that when the first figure of the divisor is greater than the first figure in the dividend, you must take the two first figures in the dividend, as in the example above, when you tried how many times 5 there was in 44, for 4 in that new dividend being less than 5 in the divisor, was the reason of the next figure being added to it, and this is a constant rule. The whole work being done, you will find that there is one million, eight hundred and eighteen thousand, eight hundred and eighty-seven times five hundred and forty-three (your divisor) in nine hundred eighty-seven millions, six hundred fifty-four thousand, three hundred and twenty-one (your dividend) and three hundred and nine remaining. For the proof of this, and all other sums in division, you must multiply the divisor by the quotient, and take in the remainder, when there is any, as in the example, the sum of this multiplication with the remainder will always be the same as the dividend, otherwise your work is false.

The GOLDEN RULE;

OR RULE OF THREE.

THE method to be observed in this rule is first to state your question, then to make your first and third numbers of one denomination, to multiply the second and third numbers together and divide by the first, and the quotient is the answer to your question. But, before you can proceed to work according to the above rule, it often happens that the first and third numbers, though of one name or denomination, yet have different parts, as halves or quarters of pounds or yards, &c. and whenever this happens, they must be reduced into the same parts or denominations one as the other; you must also, before you multiply your second and third numbers together, reduce your second or middle number into the same denomination you care to have your answer in: for example, if your second or middle number happens to be pounds, shillings, pence and farthings, it must be brought into farthings; so likewise if you would know to a farthing what any thing will cost (when there is no farthings in the middle number) you must bring the middle number into farthings. A few examples will explain these rules better than many words, which very often confound and perplex, more than instruct the ingenious reader.

If six pounds is given for a hundred of deal-boards, what will six cost at the same price?

State

State your question as in the margin, and say if 120 (the number of boards which is always fold for a hundred) cost 6*l*. what will 6 cost; then bring your 6*l*. into the lowest denomination, as farthings, by multiplying the pounds by 20 to bring them into shillings, and the shillings by 12 to bring them into pence, and the pence by 4 to bring them into farthings, as in the margin; then multiply 5760 your middle number in farthings by 6 your third number, and divide the contents of that multiplication, which is 34560, by 120 your first number; then divide 288 the quotient by 4 to bring the answer to your question into pence; and lastly divide the pence by 12 to bring it into shillings: the price being thus found for the 6 deals, you may if you please know what one deal will cost by dividing the price of the 6 deals, which is 6 shillings by 6, the number of deals, and then you will find each deal to cost one shilling. This method well observed will be of great use in many questions in the Rule of Three, &c.

| | | |
|--------------|-----------|--|
| <i>Deals</i> | <i>l.</i> | <i>Deals</i> |
| If 120 cost | 6 | what will 6 cost? |
| | 20 | |
| | 120 | |
| | 12 | |
| | 1440 | |
| | 4 | |
| | 5760 | |
| | 6 | <i>the third number</i> |
| 120 | 5760 | |
| | 4)288 | |
| | 12)72 | <i>pence</i> |
| | 6)6 | <i>shillings the price of 6 Deals.</i> |
| | 1 | |

To know what six load and a half of oak timber will cost, when two load and a quarter is sold for five pounds twelve shillings and six pence.

State your question thus, and say, If $2\frac{1}{4}$ cost 5 12 6 what will $6\frac{1}{2}$ cost at the same rate?

| | | | | |
|------------------------|-----------|-----------|-----------|---|
| <i>Load</i> | <i>l.</i> | <i>s.</i> | <i>d.</i> | <i>Load</i> |
| If $2\frac{1}{4}$ cost | 5 | 12 | 6 | what will $6\frac{1}{2}$ cost at the same rate? |
| 4 | 20 | | | 4 |
| | | | | |
| 9 | 112 | shillings | | 26 |
| | 12 | | | |

Then, according to the rule above, make your first and third numbers of one denomination by bringing them into quarters of loads, and taking in the fractions as in the example; then bring your middle number into the lowest denomination of farthings, as before, and multiply the 5400 farthings by your third number, which is 26 quarters, and divide by 9 the first number; then divide 15600 the quotient by the same numbers you multiplied the middle Number, as in the example above, which will produce the sum required, being 16*l*. 5*s*. for 6 load and a half of oak timber, &c.

| | | |
|----------|---------------------|------------------|
| | 1350 | <i>pence</i> |
| | 4 | |
| | 5400 | <i>farthings</i> |
| | 26 | |
| | 32400 | |
| | 10800 | |
| 9)140400 | | |
| 4)15600 | <i>the quotient</i> | |
| 12)3900 | <i>pence</i> | |
| 2)0)325 | | |
| | 16 | 5 |

GEOMETRY.

Some principles of Geometry explained.

A Point is that which hath no part, neither length nor breadth. A line has length but not breadth, whose ends or limits are points.

Fig. 1. For in Instance, if we conceive the point A to move towards B, by this motion it will leave a trace, or describe the line AB of length without breadth; and if that line AB be conceived to move again, so that the extream points shall describe other lines, as AD and BC, this motion will describe ABCD^t a superficies or surface. And lastly, if this surface AC (denoted compendiously by the diagonal letters) be conceived so to move upwards or downwards, the said points of the surface will describe other lines AF, DE, BG, and GH: and consequently these lines describe other surfaces, &c. By this motion there will be formed a magnitude of three dimensions, called a solid, or body, which may be, for brevity sake, denoted by the two diametrically opposite letters AH and DG, &c.

Fig. 2. A circle is made by the rotation, or wheeling a line about the center; the outside line so described is called the periphery or circumference; and a line any where through it cutting the center, is called the diameter; and half the Diameter is called the radius. The circumference of a circle, whether great or small, is divided into 360 degrees, and each degree into 60 minutes, and each minute into 60 seconds, &c.

Again, if the parallelogram ABCD being rotated about AB (the axle) it will describe a cylinder dDcC.

Also if the triangle ABC be rotated round AB as an axle, there will be described a cone A c C.

Likewise, if the semicircle ABE be rotated round about the axle AB, there will be described a sphere, or globe. But these things being only speculative, I shall wave them, and only mention them when I shall find occasion.

Explanation of Characters.

| | | |
|----------------|-----------|--|
| = | signifies | equal. |
| | | parallel. |
| + | | more, or to be added, plus. |
| - | | less, or to be subtracted, minus. |
| × | | multiplication. |
| □ | | a square. |
| ÷ | | division by, or $\frac{20}{7} = 20 \div 7$. |
| : | | proportion between the 1st and 2d number in the rule of three: ditto 3d and 4th. |
| :: | | ditto between 2d and 3d number of the rule of three. |
| √ | | square root. |
| √ ³ | | cube root. |

DEFI.

Book X.

DEFINITION.

Geometry is a science which exactly shews the magnitude or largeness of things, with their measure, &c. And 1st of superficies, and 2^{dly} of solids.

Fig. 3. I. Superficies. Suppose a square superficies 5 feet every way, as in the figure, there will be 25 feet in the same, as in the figure.

Fig. 4. A rhombus, or diamond-figure, is that which has 4 = sides, but two acute, and two obtuse angles; and a Rhomboides, or diamond-like figure, is that whose opposite sides and opposite angles are equal.

Demonstration. By the method of indivisibles to make it appear that these two figures are = as when $dc = bg$, and $ab = ef$, and contained under the same \parallel , or height. Where the rhombus is divided into an infinite number of parts, or elements, or if we should suppose the rhombus to be filled up with lays of paper, and since they are all of one length, and these same applied to the rhomboides (for be and gf are longer than the bottom and top lines or sides) the ends will coincide with the sides be and gf , and therefore equal. Therefore the way to measure a rhombos, or rhomboides, is to \times the base by the perpendicular height. 35 of the 1. of Euc.

Fig. 5. This way of reasoning holds good also in triangles: for if we suppose a large field to be divided between four men, and all of them to have the use of a pond at a . If the base bc be divided into 4 = parts, and lines drawn from thence to the common angle a , all the triangles will be =; for all the indivisible parts which fill up dae will also fill any of the rest. 1 of the 6 of Euc.

Fig. 6. Suppose a square that is
5 feet 6 inches each way,
what is the content
thereof?

| | | | |
|-------------------|-----------|-----------|------------|
| <i>f.</i> | <i>f.</i> | <i>f.</i> | <i>in.</i> |
| $5 \times 5 = 25$ | $= abcd$ | | |
| $5 \times 6 = 26$ | $= becf$ | | |
| $5 \times 5 = 26$ | $= dibc$ | | |
| $6 \times 6 = 03$ | $= cfgb$ | | |
| Total is | | 30 | 3 |

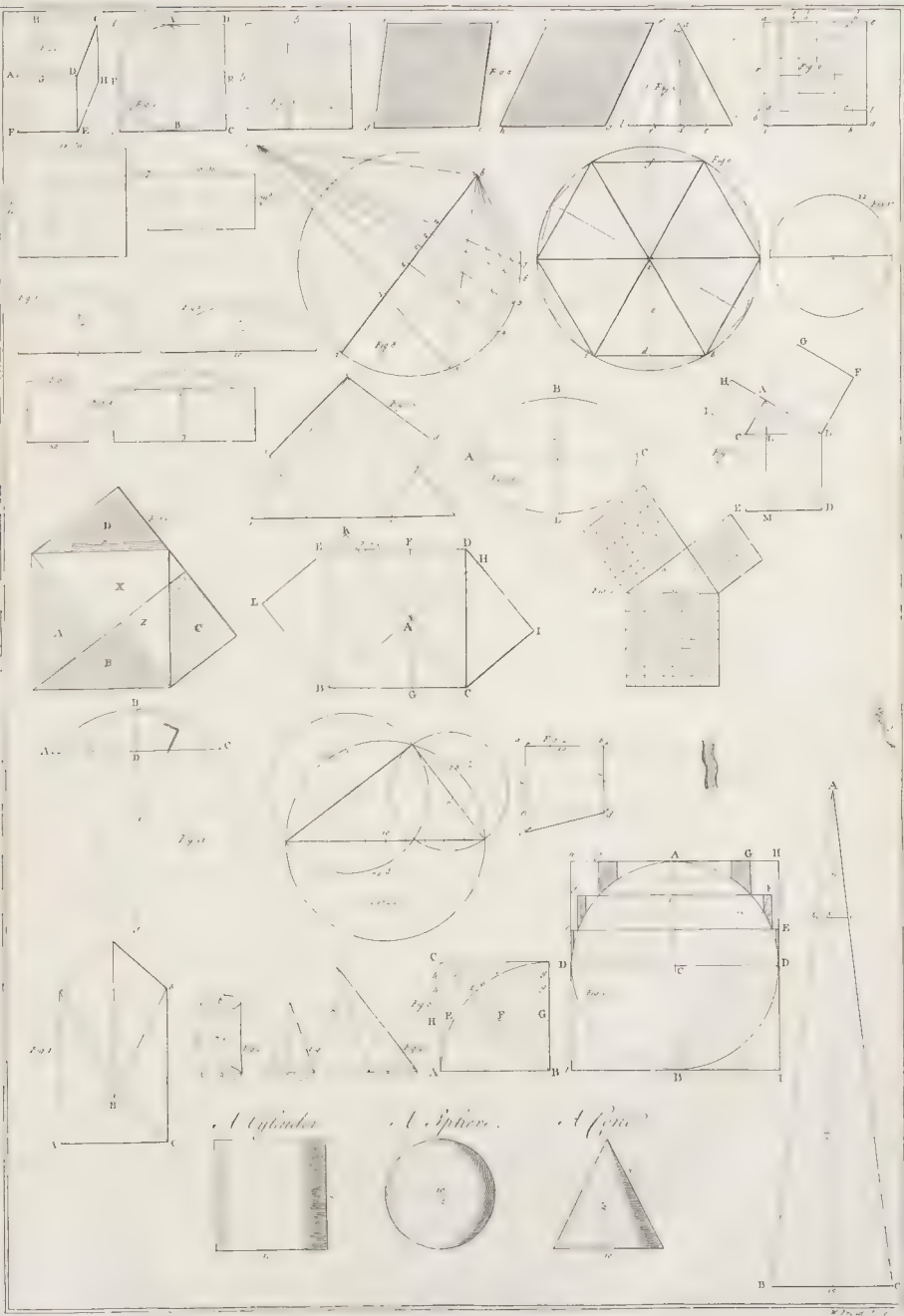
This being the grounds of cross multiplication, or duodecimal arithmetick.

Fig. 7. A square is more capacious than any oblong figure of the same girt or compass. Or we may suppose the square to be the end of a piece of 12 inches square, and the oblong 16 inches by 8 inches, which is the same girt round; and if we should cut them into pieces of 4 inches square there will be 9 in the square, and but 8 in the oblong. So that \square contains one piece 4 inches square more than the oblong.

Or by figures, $12 \times 12 = 144$
 $16 \times 8 = 128$

The difference = 16 inches.

A circle is the most capacious this way of any figure; but if the circle should be dilated out into ellipses, these ellipses will hold less than the circle by how much they



they are dilated. For instance, a bag when filled out round will hold most: if *Chap. 1*
 dilated into an ellipsis, it will not hold so much, but yet there remains the same cir-
 cumference; the sides may even be folded together so as they will hold nothing.

How to divide a circle into any number of sides, or polygons.

Fig. 8. First draw the diameter ab through the center, and raise an equalateral $\triangle abc$ upon the same, then divide the diameter ab into the same number of parts as you design sides to the polygon; then draw a line from the apex of the $\triangle c$ through two of these parts on your diameter, till it meets with the circle on the opposite side, and that will give the true side of your polygon. Let the diameter be divided into what number of parts you please, drawing through two of them the line will intersect the circle into the true side. A general rule.

Fig. 9. To measure a circle, we are to measure the circumference by $\frac{1}{4}$ of the diameter, or $\frac{1}{4}$ of the circumference by the diameter.

To illustrate this rule, we may consider this polygon of 6 sides, which makes 6 triangles all meeting in the center; and to measure this polygon, we are to add all the sides together, and \times it by half the perpendicular de (which is the $\frac{1}{2}$ of df) and it gives the content of the polygon; but this does not come up to the content of the circle by all the six segments: and although this comes short of the content of the circle, yet if we go farther, by bisecting these angles into 16 sides, it is very evident we shall come nearer the truth, and approach nearer to the circumference, but not exact enough yet: therefore if we bisect it, or trisect again; and, to be short, if we suppose it to be divided into an infinite number of \triangle s, surely then we may suppose that the sides will coincide with the circumference itself, and all the sides added together will be, or we may suppose to be, equal to the circumference, or periphery; and because $\frac{1}{4}$ the perpendicular of each \triangle is so near, or may be computed $\frac{1}{4}$ of the diameter, therefore (for any use) we may conclude the rule above is true.

Another rule to measure a circle is to square the diameter, and \times by 11 and divide it by 14, and it will give the content as above.

The reason is thus; if we admit Archimedes's proportions, i.e. as 22 is to 7 (which is near enough for any use) if, from the rule above, we suppose diameter 7 the circumference $= 3 \times 7 = 21$, to which if you add $\frac{1}{4}$ part of the diameter, which is here 1, it will $= 22$ for the circumference. Now, if we take $\frac{1}{4}$ of 22 $= 5\frac{1}{2}$, therefore if we $\times 5\frac{1}{2}$ by 7 it will be $= 38\frac{1}{2}$, the content. And now, because $5\frac{1}{2}$ is a fractional number, to avoid it, we only double it, and the numbers will be 11 and 14, as above. And because all circles are in proportion to one another as the square of their diameters. [2d pr. of 12 b. of Euc.] And also the sides of squares, and polygons bear the same proportion one to another as the squares of their sides, viz. diameter 7 $\times 7 = 49$, 94 $\times 11 = 539$, $\frac{539}{49} = 38\frac{1}{2}$ Content.

Book X.

How from the diameter to get the circumference.

Fig. 10. $\times 7$ by 3 = 21 and add $\frac{1}{7}$ of the diameter 1, it will = 22; and these numbers will always serve as a proportion for any other. As suppose the diameter to be 9, what is the circumference?

Then it will be as 7 : 22 :: 9 : 28 $\frac{1}{7}$ the circumference. Or $9 \times 3 = 27$, and

$[\frac{1}{7} \text{ of } 9 = 1\frac{1}{7}, 27 + 1\frac{1}{7} = 28\frac{1}{7}, \text{ before.}]$

$$\begin{array}{r} 9 \\ 7 \overline{)198(28} \\ 5(2) \end{array}$$

If the circumference be given it will be 22 : 7 :: 28 $\frac{1}{7}$: 9 the diameter.

$$\begin{array}{r} 7 \\ 22 \overline{)198(9} \end{array}$$

To find the circumference of a semi-circle whose diameter is 7.

Fig. 11. 7 0 the diam.

3 6 femi diam. or height

$$6 = \frac{3 \cdot 6}{7}$$

11 0 = to $\frac{1}{4}$ the whole circumf.

Fig. 12. 10 0 diam.

3 6 = height

$$6 = \frac{3 \cdot 6}{7}$$

14 0 = circumf.

To find the circumference of $\frac{1}{4}$ of a circle.

Fig. 13. 3 6 = $\frac{1}{2}$ diameter,

1 9 = $\frac{1}{4}$ height.

$$3 = \frac{1 \cdot 9}{7}$$

5 6 = to $\frac{1}{4}$ of the whole circumference of the circle.

To make an oblong equal to a semi circle having only the diameter given.

Fig. 14. 7 6 = diameter.

$$1 \ 9 = \frac{1 \cdot 6}{7} = \text{height.}$$

$$10 \ 6 = \frac{1 \cdot 9}{7}$$

$$1 \ 6 = \frac{1 \cdot 0 \cdot 6}{7}$$

2 9 0 = to $\frac{1}{4}$ of the circumference of the femicircle (11) i. e. $\frac{1}{4} \pi = 2 \frac{1}{4}$

$$\begin{array}{r} 7 \ 0 \\ 2 \ 9 \end{array}$$

$$19 \ 3 = \frac{1 \cdot 6}{7}$$

To reduce a trapezium, a b c d e, into a triangle of the same content.

Fig. 15. 1. Draw a line from a to c, and || from a c draw b f; now, if you consider a c to be the base of the $\triangle a b c$, the $\triangle a f c$ must be = to it, because the point f is contained in the same ||, therefore $\triangle a b c = \triangle a f c$, and the two sides of the trapezium is reduced to one side f c: and the other side must be reduced in the same manner, where e c will be the base of the $\triangle e d c$; and because d g is || to e c, the $\triangle e c g$ will be = to e c d, because the points d and g are in the same ||; and so the trapezium is reduced to the $\triangle f c g$.

To measure an ellipse.

Chap. 1.

Fig. 16. AC = transverse diameter; and BD the conjugate. $AC \times BD \times 11$, $16 \times 12 = 192$, $192 \times 11 = 2112$, $\frac{2112}{14} = 150 \frac{6}{7}$, the superficial content of the same.

Pythagoras's theorem. 47. 1 Euc.

Fig. 17. In a right angled $\triangle BAC$, the square $BCDE = BFGA + AHIC$.

The squares being formed from every side, as in the figure, join AE and AD , and draw $AM \parallel$ to CE ; and because right angles attend every square, and the side $BD = BC$, and the side $BA = BF$, the $\triangle DBA = CBF$; and it is evident CBF is $\frac{1}{2}$ the greater square $ABFG$; because FB being the base, and the point C is in the parallel line GA continued to C ; therefore $BCF =$ to $\frac{1}{2}$ of the $\square ABFG$, and $=$ to $\frac{1}{2}$ of $DBLM$: for A , the point of the \triangle is in the $\parallel LM$ continued; and likewise the parallelogram $EMLC$ may be proved to be $=$ to the $\square ACIH$.

Fig. 18. $A + B = C + D$. $A + B$ taken out of the great \square leaves $X + Z$. $D + D$ taken out of the lesser \square it will also leave $X + Z$; therefore the two lesser \square are $=$ to the greater.

Fig. 19. $BAE = \frac{ABLK}{2} = \frac{BEFG}{2}$ and $CAD = \frac{CAHI}{2} = \frac{GFDC}{2}$ Q. E. D.

because AC , the side of the lesser \square , is the base of the $\triangle CAD$, and the point D is in the \parallel of the opposite side IH , therefore $= \frac{1}{2}$ the lesser square.

Another way to prove the same.

Fig. 20. $\begin{array}{l} 8 \times 8 = 64 \\ 6 \times 6 = 36 \end{array} \}$ two lesser \square ,
 $10 \times 10 = 100$ greater \square .

To bring three points ABC into a circle. 8. 6 Euc.

Fig. 21. 1. Geometrically. Draw the chord-line BC , and middle it, and apply a square to the chord, and draw the middle line till it cut the diameter in e , which will be the center desired.

2. Arithmetically. The chord-line AC being middled by the diameter Bf , (which diameter and lower part of the circle is only yet supposed to be done) and AB , the chord-line drawn, there will be a right angled $\triangle ABD$, whose perpendicular $DB = 4$, and the side $DA = 9$; and the $\triangle ADf$ will be similar and proportionable to the other; because the angles are all alike in both \triangle , therefore they will be proportionable to one another, viz. at D there is a right angle common to both \triangle , and in the $\triangle ABD$, angle A and B will be $= 90$; so likewise the $\triangle fAB$: the angle

Book X. angle A will be a right angle, so the two angles at A will be one the complement of the other. Therefore as $BD : DA :: DA : Df$, to which add $DB = Bf$.
 $4 : 9 :: 9 : 20\frac{1}{4}$, to which add $4 = 24\frac{1}{4}$,
 the whole diameter; and half is = to the radius.

This may be reckoned one of Pythagoras's theorems, where there are circles instead of squares, which will likewise agree, viz.

Fig. 22. $10 =$ diameter of the greater circle.
 $8 =$ diameter of one side, and 6 the other.

| | | | | | |
|---|----------------|-------------------|---|---------------|-------------------|
| 1 | 10×10 | $= 100$ | 1 | 8×8 | $= 64$ |
| 2 | 1×11 | $= 1100$ | 2 | 1×11 | $= 704$ |
| 3 | $2 \div 14$ | $= 78\frac{2}{7}$ | 3 | $2 \div 14$ | $= 50\frac{2}{7}$ |

| | | |
|---|---------------|--|
| 1 | 6×6 | $= 36$ |
| 2 | 1×11 | $= 396$ |
| 3 | $2 \div 14$ | $= 28\frac{2}{7} =$ content lesser circle. |

$$\begin{array}{r} 20\frac{1}{2} \\ 28\frac{2}{7} \\ \hline \end{array}$$

$78\frac{2}{7} =$ to the greater circle.

To take the distance of a tree on the other side a river.

Fig. 23. At *a* put down a picket, then go onward to *b* in the strait line to the tree, and set down another picket, as suppose 20 yards; then from *a* to *c* square, or otherwise, and at *c* put down another picket also 20 yards distance; then from *c* to *d* or from *b* to *d* make the line *b d* || to *a c*, and set down a picket at *d* in a strait line from *c* to the tree. The operation follows:

As *e c* is to *e d* so is *a c* to *a f*, the distance of the tree.

In numbers, as $4 : 20 :: 20 : 100$ yards to the tree. 9. 6 Euc.

$$\begin{array}{r} 20 \\ 4 \overline{) 400} \end{array}$$

A description of solids.

Fig. 1. Every prism having a triangular base (or under) and upper face ||, may be divided into three pyramids, viz. *a C A B*, *a C b B*, and *a b c B*, equal one to the other, having equal bases and heights, or altitudes.

Draw the diagonals to all the three parallelograms or sides, as *a C*, diagonal of the face *A a b C*, *a B* of the side *A a c B*, and *B b* of the side of *B c b C*. It is no great matter which you cut off first, as suppose *a b c B*, there will then remain *a b C A B* for the two others, which must be cut in the section *a C B*; and these two will be =, because *a b C* = *A a C*, bases, and the altitudes at *B* =, so that they must consequently be equal; and if you compare the first cut *B a b C* with *A a C B*, they will also be =, and all = to one another.

From hence we may infer, that every pyramid is the $\frac{1}{3}$ part of a prism that has the same base and altitude with it: this is evident from the triangular prism above; and is also as certain of others, because there is no sort of bases but what may be

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resolved into triangular prisms, as the cylinder may be divided into an infinite number of prisms, and each prism may be supposed to be divided into three pyramids, and consequently the cone will be $\frac{1}{3}$ part of the cylinder. 1 ap. 1.

A prism is measured by \times the superficial content of the base by the altitude; but the base of a pyramid by $\frac{1}{3}$ of the altitude. The same a cone.

As it was in superficies, all parallelograms, rhombus's, triangles, having the same bases, and contained in the same altitude, whether upright or leaning, as = separately one with another, so it is likewise with parallel epipedes, prisms, and pyramids and cones, if they have severally the same bases, and contained under the same altitude, they will be severally equal; but if they should be contained in the same altitude only, and not the same bases, then they will be in proportion one to the other, as their bases, &c.

Fig. 2. To measure a cylinder. You must get the superficial content of the base whose diameter is 7, i. e. $7 \times 7 = 49$, $49 \times 11 = 539$, $\frac{539}{8} = 38\frac{1}{2}$, the superficial content of the base; and this \times by 16, the height, = 616, whole cylinder.

Fig. 3. To measure a cone which is $\frac{1}{3}$ part of the cylinder. Get the base as before = $38\frac{1}{2}$, and \times it by $\frac{16}{3} = 5.4$, $\times \frac{38.6}{5.4} = 205$, $\frac{1}{3}$ content.

Fig. 4. To measure a cone or pyramid leaning, base as before, $38\frac{1}{2}$.

$38.6 =$ content of the base.

$5.0 = \frac{16}{3}$ the height must be taken on the perpendicular, here as we mentioned in Δ .

A cylinder is to a sphere as 3 is to 2; and a cone is to a cylinder as 1 is to 3.

Fig. 5. Demonstration from this figure ABCD, where, if we consider BD as an axle, and so moved round, the square will describe a cylinder, the quadrant AEDB will describe a hemisphere; and the Δ BCD will describe an inverted cone, having all the same base and altitude.

Since circles (2 of 12 Euc.) are as the squares of the diameters. The square of GH = to the squares of GE and GF taken together; for the square of GF = \square GB, i. e. \square GB + \square GE = BE = GH = BA: and so the circle described by GH = to two circles described by GE and GF taken together: wherefore if you take away from the square GH - \square GE = \square GB within the cone = to the annulus or ring described by EH about the sphere. And since this may be demonstrated after the same way in any other place downward or upward in this figure, viz. that a circle described by gf will be = to an annulus described by eh, it will follow, that all rings or annuli described by the lines EH or eh, i. e. all that solid that is conceived to be described by the trilinear figure AEDC turned round, will be = to all the circles described by GF or gf, i. e. to the cone generated by the Δ BCD; and because the cone, $\frac{1}{3}$ part of the cylinder which was generated by moving round DB the axle, and so also the solid made by the trilinear ring AEDC, viz. the excess of the cylinder above the sphere, will be $\frac{1}{3}$ part of the cylinder; and consequently the hemisphere must be $\frac{2}{3}$ parts of the cylinder, i. e. as 3 is to 2.

Prob. X. Superficies of a cylinder is to the superficies of a sphere as 3 is to 2.

Fig. 6. To demonstrate this from this figure, viz. A C D H, half of the sphere, which is first divided into 3 parts, or parallelograms, as C E, 2 F, 1 G, which being revolved about the axis A B, there will be described in the upper part three circumscribed cylinders of = height, and a sphere as before. But if all these altitudes of cylinders are bisected or divided into two, there will be double the number of cylinders of half their heights, which being taken together, approach nearer the solidity and surface of the sphere than the former. And thus if we suppose the bisection to be continued ad infinitum, the innumerable number of those infinitely little cylinders will coincide with the surface of the sphere itself: and all their heights will = D H, the side of half the cylinder. From whence we may infer, that if the circumference of the cylinder be measured by its height, it will give the circular surface of the cylinder (= to the surface of the sphere) to which, if we add the lower and upper face of the cylinder, we shall have the superficial content of the whole cylindrical surface, = to the superficial content of six great circles, and the spherical surface = four such circles: therefore the surface of the cylinder to the sphere is as 6 to 4 or 3 to 2.

In the two foregoing figures are contained the principal properties belonging to a cylinder, sphere, and cone, and they are briefly demonstrated; which will be further illustrated by the examples following:

A cylinder with circular base.

10 feet diameter, $3 \times 10 = 30$
 $\frac{30}{10} = 3$
 = to the circumference, $31 \frac{1}{2}$

The superficial of the round plate.

$31\frac{2}{5} \times \text{circumference by}$
 10 the diameter

 $314\frac{2}{5} = \text{superficial of round part}$
 $78\frac{2}{5} = \text{superficial under-face}$
 $78\frac{2}{5} = \text{superficial upper-face}$

 $471\frac{2}{5} = \text{whole superficies.}$

The solidity.

$100 = 10 \times 10 = \square$ of diameter
 $1100 = 100 \times 11$
 $\frac{1100}{10} = 78 \frac{4}{5}$ superficial of the base
 $78 \frac{4}{5} \times 10$, height, $= 785 \frac{2}{5} =$ solid content.

Superficial content of a sphere

$31 \frac{1}{2}$ = circumference
 $\times 10$ = diameter

 $314 \frac{1}{2}$ = superficial content of the sphere, agreeable with the round surface of the cylinder, in whole or in part, = to 4 great circles, viz. $78 \frac{1}{2} \times 4 = 314 \frac{1}{2}$.

*For the solidity,**Chap. I.*

We must conceive the whole sphere to be made up or composed of an infinite number of pyramids, whose vertices or tops all meet in the center; and the superficial content of the sphere must be the superficies of all their bases, which must be \times by $\frac{2}{3}$ part of the radius, because the radius is the perpendicular height of all the pyramids; or, which is all one, if you take $\frac{2}{3}$ part of the whole diameter, so if we \times the superficial content of the sphere by $\frac{2}{3}$ part of the diameter, = to the solid content; or if you take the $\frac{2}{3}$ part of the circumference and \times it by the whole diameter it will be all one and the same thing: and if we are satisfied with Archimedes's numbers, as 7 is to 22, we may deduce another way to get the solidity of the sphere, by taking the $\frac{2}{3}$ part of 22 = $3\frac{2}{3}$; so that the diameter is to the solidity as 7 is to $3\frac{2}{3}$. Now, to clear these numbers from fractions, \times each of them by 3, and you will have the numbers 21 and 11, equivalent with the former. Therefore, because spheres are to one another as the cubes of their diameters (18. 12 Euc) as it is done in the 2d way in the margin.

1. *Solid content of the sphere.*

$314\frac{2}{3}$ near = superficial content, as above.
 $\times 1.66 = \frac{2}{3}$ part of diameter.

$$\begin{array}{r} 18858 \\ 18858 \\ 3143 \\ \hline \end{array}$$

$521.738 =$ to solid content.

Answer, $521\frac{1}{2}$ almost.

2. *Solidity another way.*

$1000 = 10 \times 10 \times 10$ cube diameter
 $\times 11 =$ a given number

$$\begin{array}{r} 1000 \\ 1000 \\ \hline \end{array}$$

$11000 = 1000 \times 11$

$\frac{11000}{\frac{21}{2}} = 523\frac{11}{21}$. This comes to more than the other above, because of the fractions taken too little.

N. B. In fig. 5 above, it is demonstrated that the solidity of the sphere is $\frac{2}{3}$ of the circumscribed cylinder, having the same height. Therefore if you take,

$785\frac{1}{2} =$ solid content of the cylinder, as above, and
 \times by $\frac{2}{3}$

$3)1571\frac{1}{3} = 523\frac{2}{3} \times \frac{2}{3}$, or $\frac{11}{21}$, the solid sphere.

More-

Book X. Moreover, in fig. 6 (of solids) the diagonal line of the quadrant AD will be the radius of a circle, which will contain the superficies of the hemisphere, and that doubled = to the whole superficies.

$$AC \square = 25$$

$$\square CD = 25$$

$$\text{Sum} = 50.00.00 (7.07 = AD, AD \times 2 = 14, 14 \text{ which is diameter of the circle.})$$

$$\begin{array}{r} 1407 \overline{) 10000} \\ 9849 \end{array}$$

$$151$$

$$\begin{array}{r} 14.14 \\ 14.14 \end{array}$$

$$\begin{array}{r} 19796 \\ 19796 \end{array}$$

$$199.9396 = \square \text{ of the diam.}$$

$$\begin{array}{r} 199.9396 \times 11 \\ 1999396 \end{array}$$

$$14 \overline{) 2199.3356} (157.0954 = \frac{1}{2} \text{ globe}$$

$$\begin{array}{r} 717 \\ \times \text{ by } 2 \end{array}$$

$$314.1908 = \text{superficies of whole [sphere.]}$$

From the first example above of the solid content of a sphere, may be deduced another way to attain to the solid content, viz. there $\frac{1}{6}$ of the diameter \times by the superficial content = to the solidity thereof: wherefore, because the superficies of the sphere = 4 great circles, therefore, instead of \times the circles by 4, if $1 \times \frac{1}{6}$ by 4 = $\frac{4}{6} = \frac{2}{3}$, therefore if $1 \times$ the superficies of the greatest circle by $\frac{2}{3}$ of the diameter, it will give the content as before.

$$78 \frac{2}{3} = \text{superficial content of the greatest circle.}$$

$$\times 6 \frac{2}{3} = \frac{2}{3} \text{ of } 10 \text{ the diameter.}$$

$$\begin{array}{r} 471 \frac{1}{3} \\ 26 \frac{1}{3} \\ 26 \frac{1}{3} \\ \hline 0 \frac{8}{3} \end{array}$$

$$523 \frac{1}{3} = \text{to the solid content, as before.}$$

A cone with circular base.

$$\frac{2}{3} = \frac{1}{1.5} \text{ near } = .57 \text{ decimals}$$

$$78 \frac{2}{3} = \text{superficial of the base}$$

$$\begin{array}{r} 78 \quad 7 = \text{superficial of base} \\ \times 3 \quad 4 = \frac{1}{3} = \frac{1}{3} \text{ perpendicular} \end{array}$$

$$\begin{array}{r} 235 \quad 9 \\ 26 \quad 2 \quad 4 \end{array}$$

$$261 \quad 11 \quad 4 = \text{solid content}$$

Superficial content.

$$\begin{array}{r}
 31 \frac{1}{2} = \text{circumference} \\
 \times 11 \frac{1}{2} = \text{slope side} \\
 \hline
 345 \ 5 = 31 \frac{1}{2} \times 11 \\
 4 \ 3 \ 3 = 37 \frac{1}{2} \times \frac{1}{2} \\
 \hline
 350 \ 1 \\
 \frac{2}{5} = 175 = \text{superficial content.}
 \end{array}$$

To measure the frustum of a pyramid or cone.

Let the frustum be B b c C $\left\{ \begin{array}{l} 3 \text{ inches blunt at top} \\ 12 \text{ inches at base} \end{array} \right\}$ a \square pyramid.

1. You may measure it as a whole pyramid, only deducting the top from it: but it may be done,

2. By getting the superficial content of top and bottom, and then \times these two contents together, and extracting the square root of the same: then add the superficial content of each end to the root found, and that sum \times by the $\frac{1}{3}$ of the height.

$$\begin{array}{r}
 3 \times 3 = 9 \text{ superficial top-end} \\
 12 \times 12 = 144 \text{ superficial base} \\
 \sqrt{\text{of } 144 \times 9} = 36 = \text{the root added} \\
 \hline
 189 \times (\frac{1}{3}) = 12 = 2268 \text{ solid content} \\
 \text{of the frustum of the square pyramid.}
 \end{array}
 \quad
 \begin{array}{r}
 \left. \begin{array}{l} \text{these } \times \text{ together} \\ 144 \times 9 = 1296 \\ 1296(36) \end{array} \right\} \\
 \hline
 9 \\
 66)396
 \end{array}$$

The height of the whole cone may be found by the rule of three, viz:

$$\begin{array}{l}
 B C = b c \text{ or } \\
 12 - 3 = 9 \left\{ \begin{array}{l} \text{as } 9 : 36 :: 12 : 48 \end{array} \right\} \text{as } 9 : 36 :: 12 : 48 = \text{whole height of the superficial base;}
 \end{array}$$

$$144 \times (\frac{1}{3}) 16 = 2304, \text{ content of whole pyramid, from which if you take top cone } = 36$$

Leaves 2268 = content of the frustum, as before.

To measure the frustum of a cone, you may observe the same method as in the pyramid, only, as this is circular, the superficies of the ends will be different, we will make use of the former figure, only reckoning the base and top circular.

$$\begin{array}{l}
 \text{Top } 3 \times 3 = 9, 9 \times 11 = 99, 99 = 7 \frac{1}{2} \text{ superf. content of upper end} \\
 \text{Base } 12 \times 12 = 144, 144 \times 11 = 1584, 1584 = 113 \frac{1}{4} \text{ superf. of base} \\
 113 \frac{1}{4} \times 7 \frac{1}{2} = 800 \frac{1}{4}, \sqrt{800 \frac{1}{4}} = 28 \frac{1}{2} \\
 \text{Sum of } \left\{ \begin{array}{l} 7 \frac{1}{2} \\ 113 \frac{1}{4} \\ 28 \frac{1}{2} \end{array} \right\} \text{these } 3 \left\{ \begin{array}{l} 7 \frac{1}{2} \\ 113 \frac{1}{4} \\ 28 \frac{1}{2} \end{array} \right\} \\
 \hline
 178 \frac{1}{2}
 \end{array}$$

$$\text{Sum } 148 \ 5 \times \frac{1}{3} 12 = 1782 \text{ solid content of frustum.}$$

The whole cone, the superficies of the

$$\text{Base is } 113 \frac{1}{4} \times (\frac{1}{3}) 16 = 1810 \frac{1}{4} = \text{solid content of the whole cone.}$$

$$\text{Top } 7 \frac{1}{2} \times (\frac{1}{3}) 4 = 28 \frac{1}{2} = \text{solid top cone, which taken out leaves}$$

$$1782 = \text{solid content of frustum, as above.}$$

Book X. The \square frustum of a piramid may be measured with extracting the root.

$$\begin{aligned} 3 \times 3 &= 9 = \text{to the } \square \text{ of the top.} \\ 12 \times 12 &= 144 = \text{to the } \square \text{ of the base.} \\ 3 \times 12 &= 36 = \text{to the rectangle of the two ends.} \end{aligned}$$

189 = to main proportional base, which $\times (\frac{1}{2}) = 12 = 2268$ solid content, as before.

We may measure the frustum of a cone the same way, only by \times the solid content, viz. by 11 = 24948, and $\frac{1}{2} \times \frac{1}{2} \times 1782$, the solid content of a frustum, as above: but this way will not be so general where the bases differ, as polygons and the like.

Suppose we are to divide the whole cone as above = 1810 $\frac{4}{7}$ into two = shares, what length must be cut off? It will be as the whole content is to the cube of the whole perpendicular, so is $\frac{1}{8}$ the whole content to the cube of the perpendicular to be cut off from the top.

$$\begin{array}{r} 1810 \frac{4}{7} \\ \hline 2 \\ 4 \times 4 \times 4 \\ 1810.57 : 64 :: 905.143 : 32 \\ \hline 64 \\ \hline 3620572 \\ 5430858 \\ \hline 1810.28)57929.152(32 = 3.18 \text{ Feet to cut off from the top.} \\ 362079 \\ \hline 0001 \end{array}$$

For Proof we must try what will be the diameter of the base of that part cut off by saying as 48 inches, the whole height, or rather 4 feet, is to 12 inches, the bottom, $\therefore 3.18$ feet to 9.54 = diameter: therefore,

$9.54 \times 9.54 = 1001.127$, and $\frac{1001.127}{14} = 71.5$ superficies of the base, 71.5×12.66 inches = to $\frac{1}{8}$ the height, it will produce 905.19 = to $\frac{1}{8}$ the content of the whole cone required.

Perspective is a branch of the Opticks.

Perspective aerial, is a proportional lessening the faint shades and colours of a picture when the objects are supposed to be at a very great distance.

Perspective lineal, shews the diminishing of those lines in the plan of the picture according to the remote representations of them.

Perspective practical, is the method of delineating that which is apparent to our sight, with a right conception of the forms of the objects.

Perspective speculative, is the knowledge of the reasons of different appearances of certain objects, according to the various positions of the eye, viz. as if the objects were viewed through a diaphanous or transparent plane, perpendicular to the ground or base-line.

From the consideration of this may the reason of all the following figures be drawn.

Fig. 1. Shews a square superficies put in perspective, with an explanation of the terms made use of. The square being viewed in the center, one half laid down, as in the plan, is sufficient.

A D is the ground-line or plane whereon the section-line or transparent perpendicular plane is to stand.

B C is the section-line or transparent plane, perpendicular to the said ground-line.

D is the point of distance on the ground where the person stands to view the object.

E, the point of sight or height of the eye viewing it. From this draw the visual rays to the plan on the ground-plane 1 2; and where they cut or intersect, the section X C, marked 1 2, will give the true depth or length of the square, foreshortened I X I 2 2 2, as is shewn by carrying on the level occult lines, horizontal to the ground-plane. From D draw the ground-rays from both corners of the square of the plan 1 2, and where they intersect the section-line X B, 1 2 gives the breadth of the square in its front and behind, which is here transferred to D, putting 2, 1 on the right and on the left of D, from which carry up perpendicular lines, and they will give the four points 1 1 and 2 2; from which right lines must be drawn, which compleats the square superficies foreshortened: and by this plain method the most intricate figures may with great ease be put into perspective.

Fig. 2. Shews the square put into perspective viewed upon the angle.

D F is the ground-line.

A B the section-line, where the radial lines from each center drawn to the point of sight E intersect.

From

Book X. From the point of sight E draw the radial lines to the plan marked 1 2 3; and where they cut in the section-line 1 2 3 will give you the foreshortened length of the figure 1 2 2 3.

Then lines drawn from the point of distance F to the angle of the plan 2, where intersects in the section-line A D, marked 2, gives the breadth of the figure, as is transferred right and left of F, 2 and 2.

The figures with which the plan is marked are put on the line of section to shew their correspondency.

Fig. 3. Shews the manner of putting a cube into perspective by the same easy rule.

As in the first figure it is said the visual rays intersecting the section-line C B, gives the lengths or depths of the superficies, must be said here the line of section which give the heights of the object as it appears to view: so that it may in general be called the section-line for taking the lengths and heights of all objects.

F D is the ground-plane.

C B, the perpendicular plane or section-line.

F, the point of distance.

E, the point of sight.

G, half the plan of the cube, it being viewed in the center:

H, its elevation.

I, the perspective appearance.

Fig. 4. Is a hexagon put into perspective.

Fig. 5. Shews how to delineate a circle in perspective, viewed in an oblique position.

As in the former figures, first draw the ground-line D F, where F will be the point of distance, and E F perpendicular to F D. E is the height of the eye or point of sight. Let your circle be drawn below the ground-line so much as you would see it obliquely, then draw a perpendicular line through the center of the circle, half of which circle divide into six equal parts: the whole into twelve. Let perpendicular lines be drawn from them to the ground-line, and from these parts given upon the ground-line to 11 12 and 1 2 3 4. Draw radial lines to the point of sight E, and where they intersect in the section-line D C will give the depths of every division of the perspective circle: Then radial lines drawn from the point of distance F to the several divisions on the circle E, where they cut in the section-line A D will give the respective breadths as marked with numerical figures, and transferred upon the line F D, and from those divisions let dotted lines be drawn perpendicular till they meet the upper parallels, will shew these the points of the perspective circle, as the corresponding figures direct. Then a curve line drawn from each gives the perspective appearance.

E Horizontal Line
 Visual Rays
 Level Occult Lines
 X Level Occult Lines
 D Ground Line
 Visual Rays
 Visual Rays

Fig 1

Half the Square
Superficies

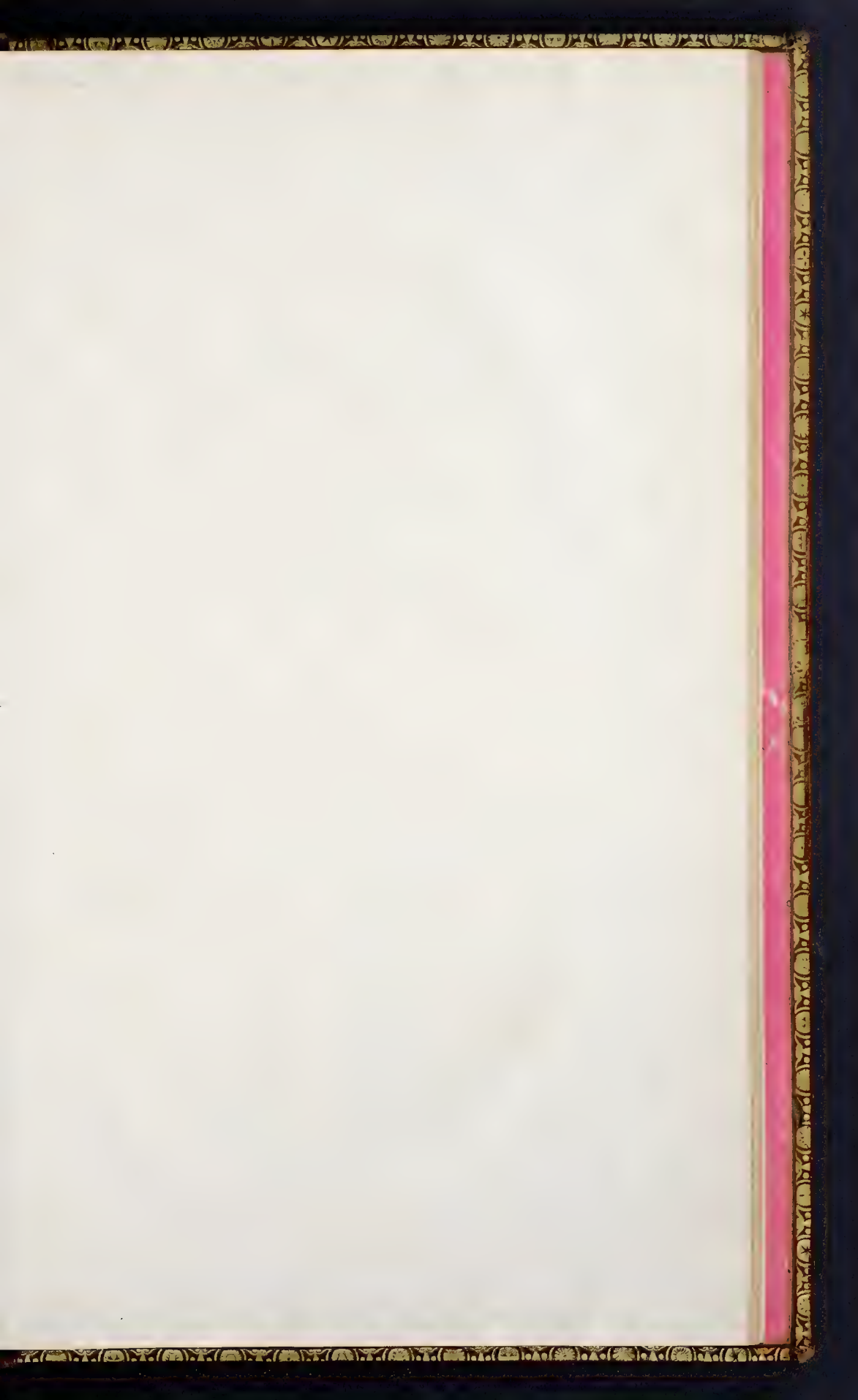
Fig 2

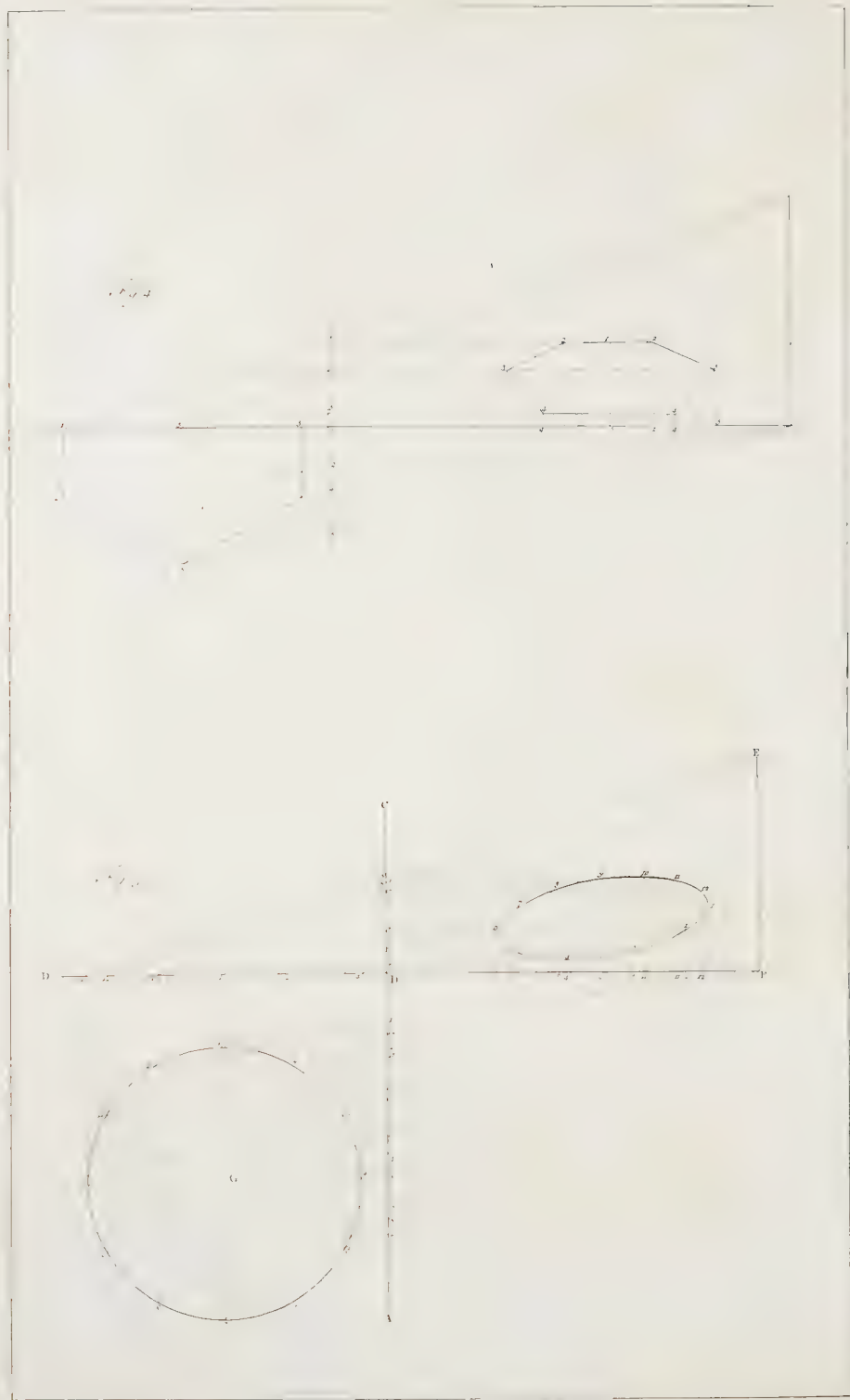


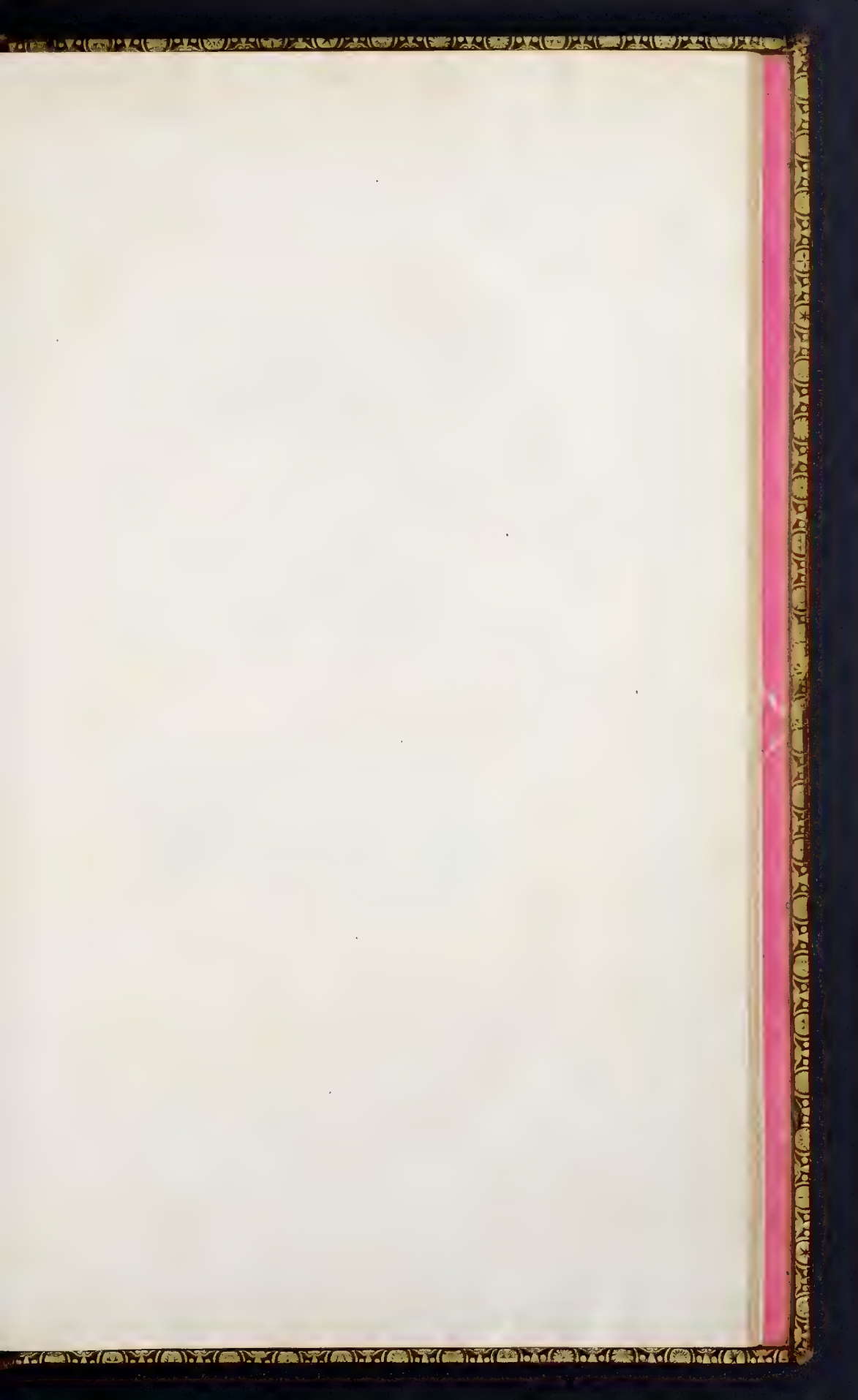
Fig 3

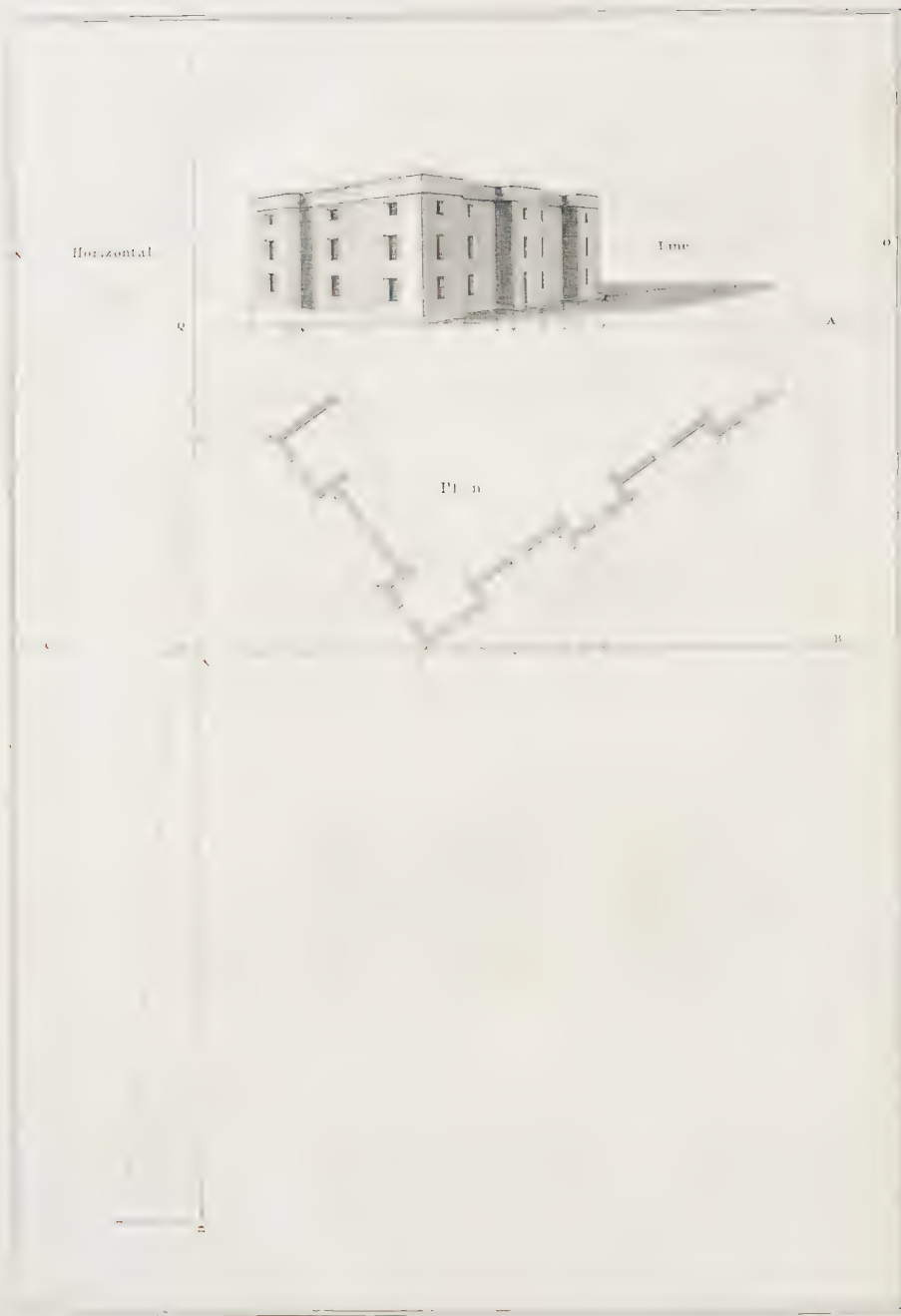
Half the Plan

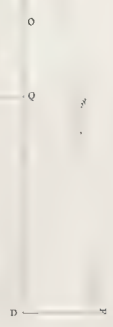
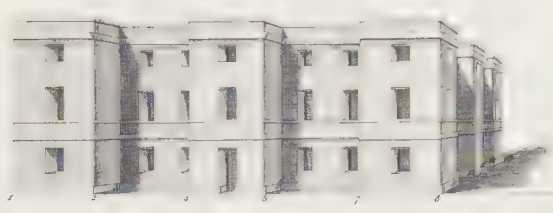
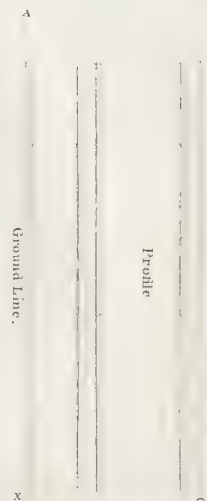
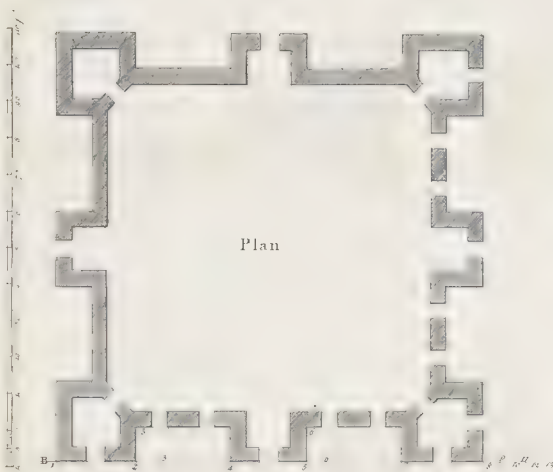


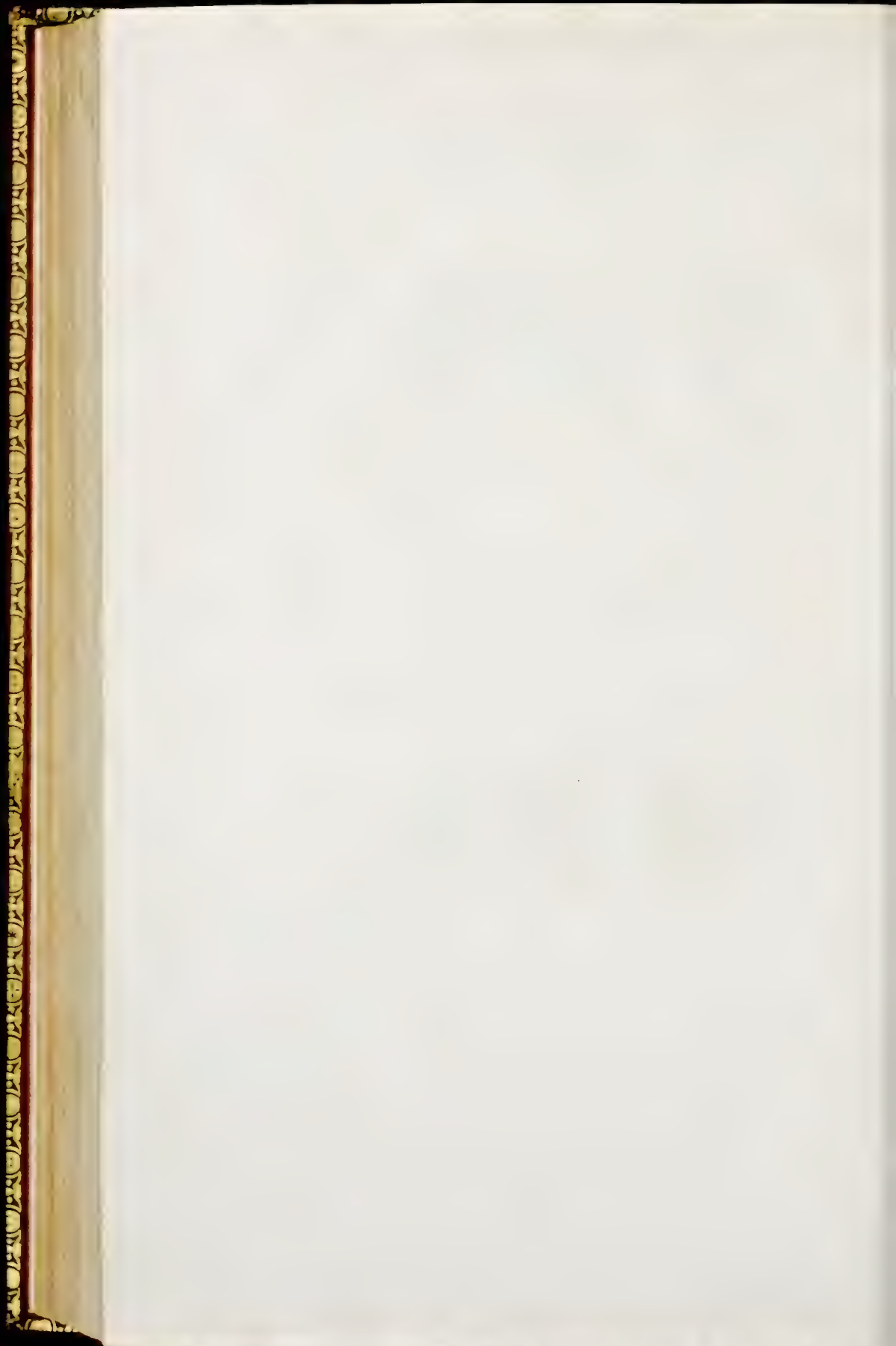












IS a building put in perspective where there are many breaks seen obliquely.

Here the section-line is placed close to the front, so that there will be no foreshortening to the extreme breaks: the height of the whole front, as well as the particular dimensions of the windows, may be put by the same scale upon those breaks by which the geometrical plan is drawn: and from every part of the front draw the ground-rays to the point of distance D, where they intersect the section-line B X, they will, in like manner as in the former examples, give the principal breaks and angles as marked with the numerical figures 1 2 3, &c. to 13, from which figures draw perpendicular lines, and they will determine all the breaks, angles, windows, &c. as is seen by the corresponding numbers.

D X A is the ground-line.

X D the distance, equal to the width X B upon the section-line.

C X B the section-line.

E the point of sight.

P L A T E. II.

IS a building put into perspective, viewed upon its angle or quoin (6) which quoin standing close to the section-line B X will not be foreshortened; so that the height of the windows and other parts of the fronts may be put by the same scale by which the geometrical plan is drawn, as in the preceding plate.

On the base-line A Q make X I on X C equal to I I on A Q will give the depth of that angle at I and X 10, on X C equal to 10 10 on the line A Q will determine the depth of the angle 10; a line then drawn from 6 to 10 continued till it intersects the horizontal-line, gives what is called the accidental point of sight (N) to which all the visual rays must tend on that side the building: in like manner, a line drawn from 6 to 1, and continued till it intersect the horizontal line (o) gives the point for drawing the visual rays to on that side the building. Here the intersections are marked on the section-line with figures 1 2 3, &c. and as the plan is figured, so are the rays upon the section-line, which shews their correspondency.

By this simple method (preferable to many words) the whole art of perspective is rendered very easy.

C H A P. II.

Menfuration.

THERE remains now to compleat the design of this work only the article of menfuration; with the prices of materials. These naturally come under confideration one with the other; and we fhall lay down the whole in a plain and familiar manner.

The number of bricks required to a given quantity of work is at this time perfectly known; and from this may be deduced the price of any part of a building, or of the whole, fo far as brick-work is concerned, with the greateft eafe and certainty.

The eafe is no way different in refpect of the price of materials in all the other confiderable articles of building; and therefore with the general price firft afcertained; and the quantity required to a given meafure known, arithmetick gives the produft, or whole price.

This is familiar, and is in the reach of every capacity. It requires no particular talents in the builder, nor any knowledge in architecture in the gentleman. He who intends to build may from his meafures thus know his expence in all the great articles.

We fhall here enter upon them at large; and to be the more ufeful, fhall confider them feverally; firft in general terms, then in the particular eftimate of one of thofe buildings of which we have given the plan and design in the preceding part of this work.

We fhall begin with the brick-work, and thence proceed to the feveral other articles. Thus will be underftood with eafe the menfuration and price of materials in one design; and as we have given plans with fcales to them, the fame method will give fo far the menfuration and price of any other building in this work or elfewhere.

We shall thus give Mensuration at large;

AS far as is useful to architecture and practised in the measurement of the several artificers works in the construction of buildings.

Of Brick-work.

Suppose a Wall was to be built 100 feet in length, and whose depth from the foundation to the first set off above ground be 3 feet, and thickness two feet three inches, and from the said set off to the top of the wall be 12 feet, and one foot ten inches thick, what quantity of rods will be contained in this wall?

Note, $272\frac{1}{4}$ feet (one brick and half in thickness) is a rod of brick-work; that is, 16 feet 6 inches, the length of a rod, \times by 16 feet 6 inches = $272\frac{1}{4}$ feet, the rod.

Now, to measure this wall, take the dimensions and place them one under the other, in manner following: in the second column put your dimensions of the lengths and heights of the wall, and in the first column place the number of bricks the wall is thick, as in the first instance 100 feet is the length, three feet the first height from the foundation, whose thickness, two feet three inches, is equal to three bricks in length: therefore in the first column you place the three bricks on the left side of the dimension; and if any dimensions are required to be repeated three or more times, the number of times is set against the dimension in the third column, on the right. The fourth column is the contents of each dimension.

Example.

| | 1st. | 2d. | 3d. | 4th |
|--------------|-----------------|-----------|-----|------------------------------|
| | | Feet. In. | | Feet. In. |
| Length | 3 | 300 0 | — | 300 0 |
| First height | | 3 0 | — | |
| | | — | | |
| | 2 $\frac{1}{2}$ | 100 0 | — | 1200 0 |
| | | 12 0 | — | |
| | | | | Foundation. |
| | | | | From set off to top of wall. |

To abstract the above contents in the common method, draw two columns, one for abstracting the $1\frac{1}{2}$ brickwork into, and the other for one brick thicknesses,

thus:

| 1 brick $\frac{1}{2}$ | 1 brick |
|-----------------------|------------------------------|
| Feet. In. | Feet. In. |
| 300 0 | 1200 0 |
| 300 0 | — |
| 1200 0 | 400 0 |
| — | 400 0 |
| 1800 0 | — |
| 800 0 | 800 = $\frac{1}{3}$ of 1200. |

Then take the 300 feet, which being in thickness 3 bricks, will be repeated twice under the head of 1 brick and $\frac{1}{2}$ work, and the 1200 feet being 2 bricks and $\frac{1}{2}$ will be placed once in the 1 brick and $\frac{1}{2}$ and once in the 1 brick, as 1 brick $\frac{1}{2}$ and 1 brick makes the 2 bricks and $\frac{1}{2}$. Add up the 1 brick $\frac{1}{2}$ work will be 1800 feet, then take $\frac{1}{2}$ of the contents of the 1 brick, which reduces that to 1 brick and $\frac{1}{2}$ thickness, and add it to the 1800 feet gives 2600 feet, that divided by 272, the feet in a rod, its contents will be 9 rods 152 feet, as above.

$$\begin{array}{r}
 272 \overline{) 2600} \quad 0 \text{ (9 rods 152 feet.} \\
 \underline{2448} \\
 152
 \end{array}$$

This

Book X. This is the common method long in practice, which we shall have occasion to repeat throughout the whole, but may be done another way, as will be shewn in some example to follow, where the manner of measuring ground-arches is shewn.

We shall now proceed to make a calculation of the several artificers works as will be required in the construction of a regular building, and for that purpose will fix as an easy introduction upon the plain design in this work plate 37, which extends in front 74 feet, part of which edifice only rises two stories, and part only one story, which are called leanto's or sheds. Under the two parlours A A will be cellars seven feet high. The ground-floor will be eleven feet high, and the attic story eight feet high.

We shall first begin with the digging out the ground for the foundationwalls and cellars; whose dimensions may be taken by the scale prefixed, and will be as follows:

| | <i>Feet In.</i> | |
|---------------------|---|---|
| Length of front | 45 0 | |
| Back front | 45 0 | |
| End walls | $\left\{ \begin{array}{l} 15 0 \\ 15 0 \end{array} \right.$ | |
| Stair-cast. walls | $\left\{ \begin{array}{l} 15 0 \\ 15 0 \end{array} \right.$ | |
| <hr/> | | |
| 150 0 length | $\left. \begin{array}{l} 28 3 \\ 28 3 \\ 28 3 \end{array} \right\}$ | <i>Feet In.</i>
foundation to be dug for the footing to all the walls of that part of the building which is to be carried up two stories above ground. |
| 2 0 width | | |
| 0 9 depth | | |
| <hr/> | | |
| 45 0 length. | 6615 0 | earth dug out for making the cellars and stairs. |
| 21 0 width. | | |
| 7 0 depth. | | |
| <hr/> | | |
| 178 0 length. | $\frac{356 0}{1}$ | Digging the foundation one foot deep to all the walls of the leanto's. |
| 2 0 width. | | |
| 1 0 depth $\div 27$ | | |
| <hr/> | | |
| 268 yards 16 feet. | | |

These dimensions \times their length by the widths, and what they produce \times by their depths, gives to each dimension its contents of cubical feet; then the whole added together, as above, will be 7252 feet 3 inches, which \div by 27, the cubical feet in a yard, gives the number of yards, 268 and 16 feet.

Note, 3 feet is a yard \times by 3 = $9 \times 3 = 27$, which makes the cubical yard.

We shall now proceed to the measurement of the brickwork, and lay down the dimensions in form and manner as taught in the first example; with this difference only, that we will add one column more in the margin to the right hand, for the collecting together several lengths of walling that will come under one and the same heights and thickness, in order to lessen the number of dimensions that would be required if taken separate.

| Length collected.
Feet In. | 1st
Bricks | 2d
Feet In. | 3d
Feet In. | |
|-------------------------------|---------------|----------------|----------------|--|
| 44-0 | 3 | 118-0 | | |
| 44-0 | | 0-9 | | |
| 15-0 | | 15-0 | | 88-6 The footing or foundation to the four outward walls of the cellars. |
| 15-0 | 2 1/4 | 9 | | |
| | | 118-0 | 2 | 22-6 Ditto to the cross walls of the stair-case. |
| | 2 1/4 | 7-0 | | |
| | | 15-0 | 826-0 | The four outside walls in height of the cellar-story. |
| | | 7-0 | 2 | 210-0 Stair-case walls in ditto, height. |
| | | 26-0 | | |
| | 1 1/4 | 8-0 | 208-0 | Add the break in the front or middle. |
| | | 6-0 | 104-0 | |
| | | 7-9 | | |
| | 1 1/4 | | 3 | 139-6 Add for breaks to the chimneys. |
| viz. | | 6-0 | | The deductions from the above dimensions will be the door-ways and recesses in the carriages for chimneys. |
| | 1 1/4 | 3-0 | | |
| | | 3-0 | 2 | 36-0 Deduct openings to doors. |
| | | 4-0 | | |
| | 2 | | 2 | 24-0 Deduct recesses in the breaks that carry the chimneys. |
| | | 38-0 | | |
| | | 15-0 | | |
| | | | | 570-0 Flat brick paving. |

From the ground-floor to the stone-cornice.

| | Feet In. | Feet In. | |
|-------|----------|----------|--|
| 2 | 118-0 | 2360-0 | Length of the front, back and end walls in height of the two Storys. |
| | 20-0 | 520-0 | Add the middle break. |
| | 26-0 | | |
| 1 1/2 | 20-0 | 260-0 | |
| | 34-0 | | |
| 1 1/2 | 2-6 | | |
| | 15-0 | 2 | 85-0 Timpan of the pediment, which is the length of the base-line by half the perpendicular. |
| 1 1/2 | 20-0 | | |
| | 5-6 | 3 | 600-0 Cross walls to the stair-case. |
| 1 1/2 | 20-0 | | |
| | 5-6 | 3 | 330-0 Add the breast to the three chimneys. |
| 3 | 8-0 | | |
| | 7-0 | 2 | 88-0 Shafts of chimneys above the roof. |
| 2 1/4 | 3-6 | | |
| | 3-0 | | 24-6 Deduct entrance door. |
| 2 | 6-0 | | |
| | | 3 | 54-0 Deduct inside doors. |

A COMPLETE BODY

| Feet In | Feet In | |
|-----------------|---------|--|
| 1 $\frac{1}{2}$ | 3-0 | |
| | 6-0 | |
| 2 $\frac{1}{2}$ | 3-0 | 4 72-0 Deduct doors in stair-case walls. |
| | 6-0 | |
| 2 $\frac{1}{2}$ | 3-0 | 2 36-0 Deduct the windows on each side the door, middle break. |
| | 6-0 | |
| 2 $\frac{1}{2}$ | 3-0 | 2 36-0 Deduct on each side the break. |
| | 6-0 | |
| 2 $\frac{1}{2}$ | 3-0 | 3 27-0 Deduct attick windows in the middle break. |
| | 6-0 | |
| 2 | 3-0 | 2 18-0 Deduct attick windows on each side the break. |

As these are all the dimensions of the brick-work contained in the principal part of the building, we now come to see what more there will be in the lower parts, called the leanto's.

| Feet In | Feet In | Feet In | |
|---------|-----------------|---------|---|
| 16-6 | 174-0 | | |
| 10-6 | 9 | | |
| 15-0 | | 130-6 | The footing or foundation to the rooms C D E F. |
| 11-0 | 174-0 | | |
| 11-0 | 12-0 | 2088-0 | From the footing up to the plate of the roof. |
| 17-0 | 12-0 | | |
| | 6-0 | 144-0 | Allowance for breasts of chimneys. |
| 87-0 | 3-0 | 288-0 | |
| 87-0 | 6-0 | | |
| 174-0 | 1 $\frac{1}{2}$ | 54-0 | Deduct doors. |
| | 3-0 | | |
| | 6-0 | 126-0 | Deduct the windows. |
| | 15-0 | | |
| | 6-0 | 180-0 | Brick-work in the spandrels over the niches, and the back part parallel to them. |
| | 11-0 | | |
| | 6-0 | 132-0 | The spandrels of the leanto's D and E. |
| | 3-6 | | |
| | 1-0 | 45-6 | Superficial rubbed and gaged strait arches to all the windows measured on the face. |
| | 3-0 | | |
| | 0-6 | 19-6 | The superficial measure of soffits to ditto arches. |
| | 17-0 | | |
| | 10-0 | 340-0 | Foot tile paving to the offices D and F. |
| | 13-6 | | |
| | 15-0 | 202-6 | Dutch clinker paving to the stable F. |

To abstract the foregoing particulars, columns must be drawn as before: one for the brick and half work, and another for one brick work, and at the side of each

a column in like manner for the deductions, then take the contents of your first dimension, which is 88 feet 6 inches; and it being in three-brick work will be repeated twice in the column of 1 brick $\frac{1}{4}$. The next content, which is 22 6, being in 2 brick $\frac{1}{4}$ work, will be placed once in the 1 brick $\frac{1}{4}$, and once in the column of one brick: and in this method the following abstract is drawn up from the foregoing particulars.

A B S T R A C T.

| 1 Brick 1. | 1 Brick $\frac{1}{4}$ deduct. | 1 Brick. | 1 Brick deduct | Flat brick paving. | Foot tyle paving. | Dutch clinker paving. | Robb'd and gag'd arches. |
|---------------|-------------------------------|----------|--|-------------------------|-------------------|-----------------------|--------------------------|
| Feet In. | Feet In. | Feet In. | Feet In. | Feet In. | Feet In. | Feet In. | Feet In. |
| 88-6 | 36-0 | 22-6 | 24-0 | 9)570-0 | 9)340-0 | 9)202-6 | 45-6 |
| 88-6 | 24-6 | 826-0 | 24-0 | | | | 19-6 |
| 22 6 | 72-0 | 210-0 | 24 6 | 63 yds. $\frac{1}{2}$. | 37 yds. 7 f. | 22 yds. 4 f. | 65 0 |
| 826-0 | 36-0 | 210-0 | 54-0 | | | | |
| 139-6 | 27-0 | 104-0 | 54 0 | | | | |
| 85-0 | 54-0 | 2360-0 | 36 0 | | | | |
| 600-0 | 126-0 | 2160 0 | 36 0 | | | | |
| 330-0 | | 260-0 | 36-0 | | | | |
| 88-0 | 375-6 | 120-6 | 27-0 | | | | |
| 88-0 | | 130-6 | 18-0 | | | | |
| 2088-0 | | | 18 0 | | | | |
| 298-0 | | 6613 6 | | | | | |
| 180 0 | deduct | 351-6 | 351-6 | | | | |
| 131-0 | | | | | | | |
| | | $\div 3$ | 6260 0 | | | | |
| 5044-0 | | | | | | | |
| 375-6 deduct. | | 2087-8 | | | | | |
| 4668-6 | | 2087 8 | | | | | |
| 4175-4 | | 4175-4 | the $\frac{1}{2}$ carried to the 1 brick and $\frac{1}{4}$. | | | | |

$\div 272$ 8843-10 (32 rod 139 feet, the whole content of brick-work.

816

683

544

139

Paving is always reduced to superficial yards square, which is three feet \times by 3 \div 9; there being 570 feet flat brick paving \div 9 \div 63 yards $\frac{1}{2}$. Of foot tyle paving 340 feet \div 9 \div 37 yards $\frac{1}{2}$; and of Dutch clinkers 202 feet 6 inches \div 9 \div 22 yards 4 feet.

A bill of this abstract will be made out at the end of the general estimate of the other artificers works, and the prices of the whole considered together; therefore shall now give the dimensions of the covering of the building, which may be either tiling or slating, but will give preference to the latter. And begin with the dimensions of the middle roof: take the extreme length by its breadth, the dimensions will be 46 feet by 31 feet; and this dimension is called once and one half, the common way of measuring, slating or tiling: in the case of slating an addition is made to the measurement for valleys and eaves, as we shall suppose the hips and ridges to be covered with lead; and that allowance is the length by one foot in breadth; the reason is, that the slates to the valleys are cut to their proper angle, and those of the

Book X. the eaves for their extraordinary lap one over the other. The dimension will then be

$$\begin{array}{r} \left[\begin{array}{l} 46-0 \\ 31-0 \end{array} \right] 1\frac{1}{2} \\ \hline 46 \\ 138 \\ \hline 1426 \\ \text{The } \frac{1}{2} 713 \\ \hline 2139 \\ 182 \text{ in valleys and eaves.} \\ \hline 2321 \end{array}$$

The total will be 2321 feet, or 23 square 21 feet.
A square is 100 feet, that is, $10 \times 10 = 100$.

The shed-roofing over the rooms C and F, the dimensions will be 17 feet the length of the rafter by 17 the width.

$$\begin{array}{r} \left[\begin{array}{l} 17-0 \\ 17-0 \end{array} \right] 2 \\ \hline 1100 \\ 17 \\ \hline 289 \\ 2 \\ \hline 575 \\ 34 \text{ add for the eaves.} \end{array}$$

6,12 feet, or six square, 12 feet.
23,21 slating brought forward.

29,33 which is 29 square 33 feet, quantity of slating contained upon the whole.

But before we leave the the bricklayer shall give the manner of measuring groined arches with the greatest accuracy, as there are not any calculated in the preceding account, as well as shew a different method of taking the dimensions. In the last plate is the plan and section of groined arches.

Supposed 27 feet square within the walls, and height from the springing to the top of the arch 6 feet 9 inches, and from the springing to the soffit or underside of the arch 6 feet. To measure the said groined arches, take the dimensions in the manner following:

$$\left[\begin{array}{l} 9 \\ 27-0 \end{array} \right] \begin{array}{l} \text{length.} \\ \text{breadth.} \end{array} \left. \vphantom{\begin{array}{l} 9 \\ 27-0 \end{array}} \right\} \text{And the height being 6 feet 9 inches must be brought into} \\ \left. \vphantom{\begin{array}{l} 9 \\ 27-0 \end{array}} \right\} \text{bricks 6 feet 9 inches} = 81 \text{ inches} = 9 \text{ bricks.}$$

$$\begin{array}{r} 729- \\ \hline 81 = 9 \text{ of 9 bricks gives the contents reduced to the 1 brick and } \frac{1}{2} \text{ thickness.} \end{array}$$

4374

As there are three dimensions 27 and 27 and 9 bricks, you may take $\frac{1}{3}$ of either of them, and they will come to just the same; for, as $\frac{1}{3}$ of 9 bricks = 3, and the total of the two first dimensions $729 \times 3 = 4374$, so will $729 \times 18 \frac{1}{2}$ bricks = $13122 \div 3$, the product will be as before, 4374 feet.

Again,

ERRATA in the MENSURATION.

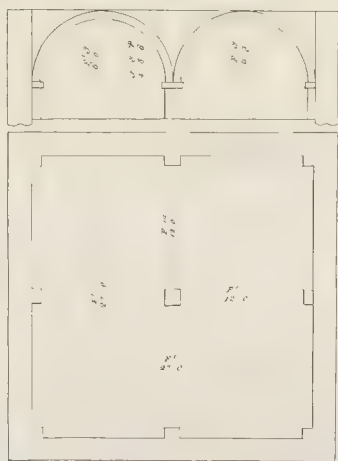
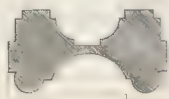
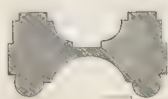
Page 723, line 1, for *Door* read *Doors*.

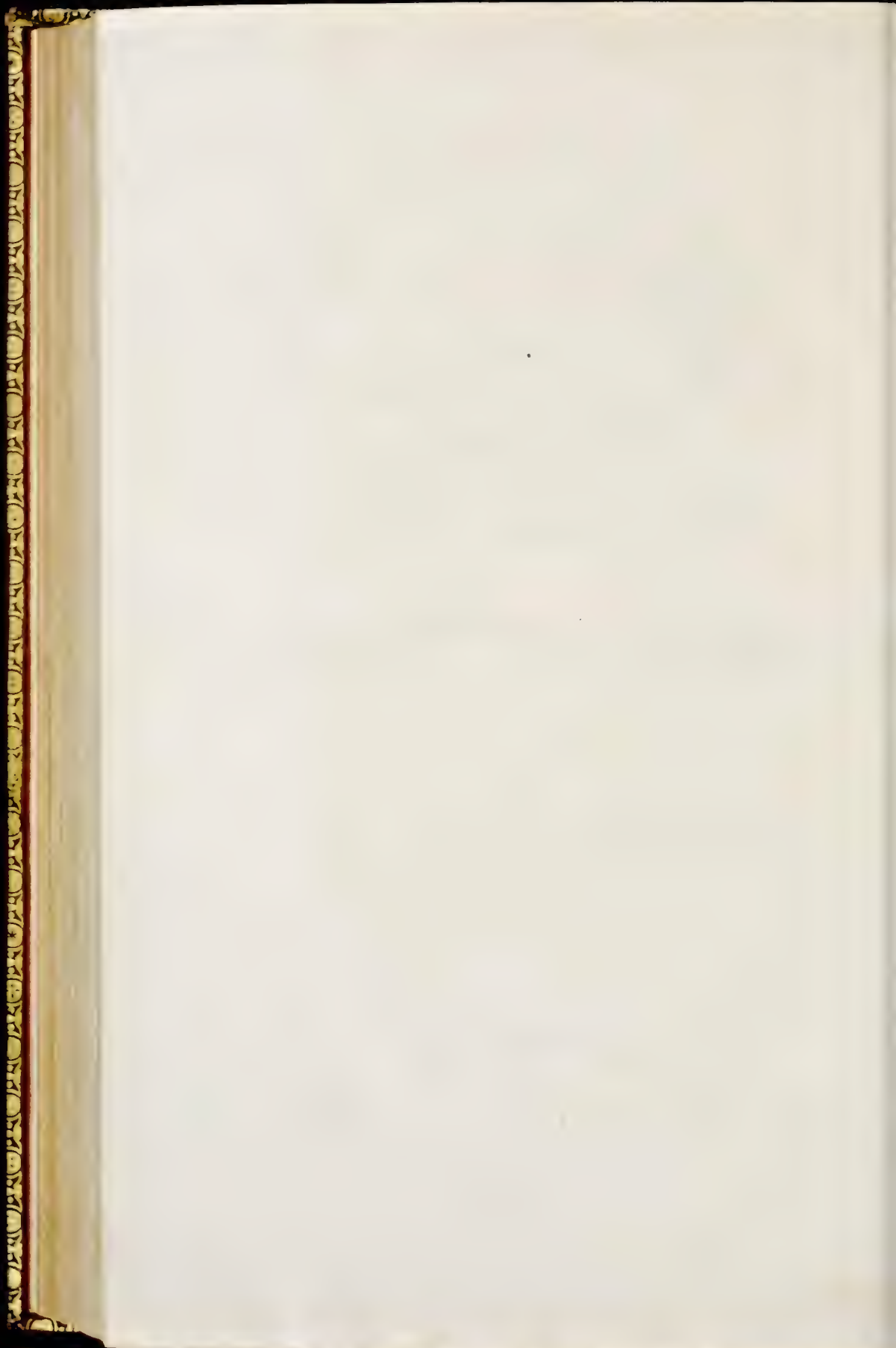
—23, for 300 read 100.

731, —5 from the bottom, for *scantling* read *rafters*.

732, —1 and 2, for *dovel'd* read *dowel'd*.

733, —last, for *square* read *diameter*.





Again, $27 \times 18 = \frac{1}{3} 27$, will produce $486 \times$ by the 9 bricks, the product will be as in the former, 4374 feet. Chap. I.

As by the above dimensions we have taken the groined arches solid, we must next proceed to the deductions. The groined work is 27 feet between the walls; and there are two arches each way to be taken, which are 6 feet high in the clear from the springing. Now, 27 will be the length and 12 feet the width for the deduction, but 6 feet will be too much for the height: it being half a cylinder, it must be reduced to a square equal; or with a five feet lath measure the sweep, and take $\frac{1}{3}$ of the sweep or arch, and it will be the proper height of the square or oblong.

To find it arithmetically, get the half circumference of the circle, viz. as $7 : 22 :: 12 : 37.7$, or $37 \frac{7}{10}$, or 37 feet 8 inches, and the half of it is 18 feet 10 inches. Now, the $\frac{1}{3}$ part of this $18 \text{ } 10 = 4 \text{ feet } 8 \text{ inches}$, and 6 parts for the height of the oblong, which must be brought into bricks.

| Deduction. | | Another way. | |
|------------|--|---|---|
| 6 | $\begin{array}{r} 27 \text{ } 0 \\ 12 \text{ } 0 \end{array} \left 4 \right $ | Or take | Take $27 \text{ } 0$ |
| | | $12 \text{ } \frac{1}{3} \text{ bricks.}$ | $8 \text{ } 0 = \frac{1}{3} \text{ of } 12.$ |
| | $\begin{array}{r} 324 \text{ } 0 \\ 4 \text{ } 0 \text{ times} \end{array}$ | $3)15552$ | $\begin{array}{r} 216 \text{ } 0 \\ 4 \text{ } 0 \text{ times.} \end{array}$ |
| | $\begin{array}{r} 1296 \text{ } 0 \\ 4 \text{ } 0 = \frac{1}{3} \text{ of } 6 \text{ bricks.} \end{array}$ | 5184 reduced. | $\begin{array}{r} 864 \text{ } 0 \\ 6 \text{ } 0 \text{ bricks.} \end{array}$ |
| | $5184 \text{ } 0 \text{ reduced.}$ | | $5184 \text{ } 0 \text{ reduced as before.}$ |

As we have taken these deductions of the arches through four ways, an addition must be made for the quadrantal semi-spheres which were taken too much in the deductions, the measure of which will be

| | |
|---|---|
| 6 | $\begin{array}{r} 12 \text{ } 0 \\ 12 \text{ } 0 \end{array} \left 4 \right $ |
| | $\begin{array}{r} 144 \text{ } 0 \\ 4 \text{ } 0 \text{ times.} \end{array}$ |
| | $\begin{array}{r} 576 \text{ } 0 \\ 4 \text{ } 0 = \frac{1}{3} \text{ of } 6 \text{ bricks.} \end{array}$ |
| | $2304 \text{ } 0 \text{ reduced.}$ |

As groined arches require more art and skill in the performance than common arches which are not groined, by reason of the bricks being all cut to fit each other in the groins, an allowance is made to the workmen for that extraordinary labour, and this is measured by the feet running: there will in these arches be 190 feet 8 inches running of groins cut.

Abstract of brick-work contained in the groined arches.

Dimensions reduced brought forward.

| |
|--|
| 4374 |
| 2304 add the quadrantal semi-spheres. |
| 6678 |
| 5184 deduct the vacancy of the arches. |

272)1494(5 rods 134 feet.

1360

134

Nº 78.

8 Z

Having

A COMPLETE BODY

Book X.

Having gone through the bricklayers work, the next in course will be the carpenters, and the first parts to be taken are the door-cases and doors in the cellars, and lintels over those doors. To measure the door-cases take the extrem height of the sides and add to that the length of the head; which will make a dimension of 20 feet 8 inches, the length, and whose scantling will be 6 inches by 4 inches: and as this kind of work should always be reduced to cubical feet, the dimension will be

| Feet In. | Feet In. Parts | |
|----------|----------------|---|
| 20 8 | | |
| 6 | | |
| 4 | | |
| 20 8 | 2 6 10 8 | Fir door-case to the two doors, framed, plaind and rabbetted. |
| 4 0 | | |
| 6 | | |
| 3 | | |
| 2 1 | 2 1 | Oak cells to ditto. |
| 4 6 | | |
| 1 6 | | |
| 2 13 6 | 2 13 6 | Rough fir in lintels over the doors. |
| 3 0 | | |
| 1 0 | | |
| 3 | | |
| 4 3 0 | 4 3 0 | Rough fir lintels that lie under the beams. |

The next will follow the timber-floors, called naked flooring; and the first to be taken is that over the three rooms and stair-case A B C, which rooms being 15 feet wide and the beams or girders laying cross that way, that dimension must be called 17 feet, as the customary way is to allow one foot each way for wall-hold; and the joist lying the contrary way, 6 inches at each end is allowed extraordinary for wall-hold; therefore the two rooms A being 15 feet each way, the dimension will be

| Feet In. | Feet In. | |
|----------|----------|---|
| 17 0 | | |
| 16 0 | 2 544 0 | Naked floor to the rooms A A, the girders of which will be 12 inches square, binding joists at about 3 feet; a part will be 9 inches by 4, the bridging will be 4 inches square, and the ceiling-joist 3 inches square. |
| 17 0 | | |
| 15 0 | 2 555 2 | Ditto to the room C. |
| 9 0 | | |
| 11 0 | | |
| 1 0 | 1 99 c | Ditto to the stair-case. |

Under the ends of all the joists will be a plate of fir; for them to rest on, whose length will be

| Feet In. | Feet In. | |
|----------|----------|---|
| 114 0 | 14 3 | Rough fir under ends of joists. |
| 6 | | |
| 3 | | |
| 17 0 | | |
| 16 0 | | |
| 2 544 0 | 2 544 0 | Naked flooring, scantlings as before to the 2 rooms over A A. |
| 1 c | | |
| 3 6 | | |
| 3 | | |
| 14 3 | 14 3 | Rough fir plates under ends of joists, to ditto floors. |

In ordinary cases and common buildings the beams would be but 10 inches deep, and joists framed into them one foot a part, the depth without either ceiling, joists, or bridgings; sometimes they are framed with ceiling joists, but floors framed as here calculated are the strongest and best.

| Feet In. | Feet In. | |
|----------|----------|--|
| 4 0 | | |
| 1 6 | | |
| 14 | 84 0 | Lintels to door and windows. |
| 42 0 | | |
| 16 0 | 672 0 | Ceiling floor under the roof. |
| 44 0 | | |
| 18 0 | 1188 0 | Trufs roofing, the beams 10 inches deep and 8 inches thick, principal rafters 10 inches by 7 inches at the bottom, and 9 inches by 7 inches at the top; collar beams 9 inches by 8 inches; king post 7 inches square, besides the joggles; braces 6 inches square, and small rafters 6 inches by 4 inches. |
| 124 0 | | |
| 6 | 20 8 | Wall-plate under the roof framed. |
| 4 | | |
| 350 0 | | |
| 4 | | |
| 3 | 29 2 | Rough fir in discharging pieces over the breasts of chimneys, and bond timber. |
| 34 0 | | |
| 15 0 | 765 0 | Shed roofing. |
| 38 0 | | |
| 11 0 | 627 0 | Ditto. |
| 176 0 | | |
| 6 | | |
| 3 | 22 0 | Wall plates under ditto. |

In this place it will be necessary to shew an abstract of the foregoing dimensions of carpentry before we begin on other works in the same branch. The first column will be for door-cases, and so on according to the different kind of works as they follow.

A B S T R A C T.

| Cube fir door-cases planed, framed, and rabbetted. | Cube oak door cills. | Rough fir in lintels, &c. | Naked flooring. | Ceiling floor. | Trufs roofing. | Rough fir framed. | Shed roofing. |
|--|----------------------|---------------------------|-----------------|----------------|----------------|-------------------|---------------|
| Feet In. Per. | Feet In. | Feet In. | Feet In. | Feet In. | Feet In. | Feet In. | Feet In. |
| 6 10 8 | 1 0 | 13 6 | 544 0 | 6,72 0 | 11,88 0 | 20 8 | 765 0 |
| | | 3 0 | 295 0 | | | 22 0 | 627 0 |
| | | 14 3 | 99 0 | | | | 1392 0 |
| | | 14 3 | 544 0 | | | 42 8 | |
| | | 84 0 | | | | | |
| | | 29 2 | 14,42 0 | | | | |
| | | 158 2 | | | | | |

Bill of the above.

| Feet In. | | |
|----------|--|--|
| 6 10 8 | Cube fir door-cases planed, framed, and rabbetted. | |
| 1 0 | Cube oak door cills. | |
| 158 2 | Rough fir lintels, discharging pieces, and bond timber. | |
| 14 | Naked flooring. | |
| 6 | Ceiling floor. | |
| 11 | Of trufs roofing. | |
| 42 8 | Rough fir framed in plates to ditto. | |
| 13 | Shed roofing, scantling, and braces, 6 inches by 4 inches. | |

What follows in the carpentry will be the boarded flooring: in this, for the sake of giving variety, we shall suppose each room of a different sort, and shall put the prices to each, as also to all the foregoing articles at the close of the account, where all the bills may be brought together.

| Break X. | Feet In. | Feet In. | |
|----------|----------|----------|---|
| | 15 0 | | |
| | 14 0 | | |
| | 15 0 | 210 0 | Right wainscot dovel'd floor to the study. |
| | 15 0 | | |
| | 15 0 | 225 0 | Clean deal floor dovel'd to the joining parlour. |
| | 15 0 | | |
| | 15 0 | 225 0 | A second best dovel'd floor to the other parlour. |

From the above there will be three small deductions made for the breaks of the chimneys, the space on which the slab lies is never deducted, the extraordinary workmanship of the border round it is given as an allowance for it. The chimneys breaking forward 1 foot 2 inches into the room, and their width 6 feet, will be the dimension for the deductions.

| Feet In. | Feet In. | |
|----------|----------|--------------------------------------|
| 6 0 | | |
| 1 2 | 7 0 | Deduct out of the wainscot floor. |
| 6 0 | | |
| 1 2 | 7 0 | Deduct out of the clean deal floor. |
| 6 0 | | |
| 1 2 | 7 0 | Deduct out of the second best floor. |

The one pair of stairs floors.

| Feet In. | Feet In. | |
|----------|----------|--|
| 15 0 | | |
| 15 0 | 225 0 | Streight joint floor nailed. |
| 15 0 | | |
| 15 0 | 225 0 | Common folding joint floor. |
| 14 0 | | |
| 15 0 | 2 420 0 | Rough whole-deal floors to the lofts over the sheds. |

There will be two deductions as before.

| Feet In. | Feet In. | |
|----------|----------|--|
| 6 0 | | |
| 1 2 | 7 0 | Deduct for the streight joint floor. |
| 6 0 | | |
| 1 2 | 7 0 | Deduct for common folding joint floor. |

N^o 22. Steps of stairs of clean deal three feet going, including their strings and bearers.

| Feet In. | Feet In. | |
|----------|----------|---------------------------------|
| 7 6 | | |
| 8 0 | 2 120 0 | The quarter paces and landings. |

25 feet running off turned rail and banister 2 inches square.

Abstract of the flooring, &c.

Chap. I.

| Wainscot do-
vel'd floor. | Clean deal
dovel'd floor. | Second best
dovel'd floor. | Staight
joint floor. | Common
folding
joint. | Rough whole
deal board. |
|------------------------------|------------------------------|-------------------------------|-------------------------|-----------------------------|----------------------------|
| Feet In. | Feet In. | Feet In. | Feet In. | Feet In. | Feet In. |
| 210 1 | 225 0 | 225 0 | 225 0 | 225 0 | 420 0 |
| 7 0 | 7 0 | 7 0 | Dt. 7 0 | Dt. 7 0 | |
| 203 10 | 218 0 | 218 0 | 218 0 | 218 0 | |

To N° 22 of steps of stairs clean deal, strings and bearers.

120 feet superficial of clean deal quarter-paces and landings, including their joists and bearers.

25 feet running of turned rail and banister, 2 inches diameter.

M A S O N.

As the plinths, strings, fascias, and cornices are here intended to be of stone, we shall shew in what manner it is to be measured. All stone-work should be reduced to the foot cubical, and the workmanship bestowed on it measured and brought into feet superficial, except in some cases of ashlar and thin coping, which are frequently measured by the feet superficial, their thicknesses being ascertained. As ashlar in good works should have, one stone with another, nine inches bound in the wall. What is meant by ashlar, is, the casing of a building with stone: the plain face is called plain ashlar, and the rustick basement is called rustick ashlar. In the case before us we have none of that sort of work.

We shall begin with the stone plinth of the building; and as it will be of different thicknesses in the wall, we will, to save trouble of many dimensions (which by taking every single stone there would be) suppose the plinth at a medium to be 6 inches thick, as also the string and fascia above it; so that in taking the dimensions collect the whole lengths round the building, and that will be

| Feet In. | Feet In. |
|----------|----------|
| 208 0 | |
| 2 3 | |
| 6 | |
| — | 234 0 |

Then add together the height of the plinth one foot, the string six inches, and fascia nine inches, will make two feet three inches, which set under the length 208 feet, and under that the thickness 6 inches, which multiplied together will give the cubical content 234 feet. The same length must again be taken, and to the height 2 feet 3 inches, ten inches must be added for the projections out of the wall, which are wrought, and that dimension is called the plain work.

| Feet In. | Feet In. | |
|----------|----------|--------------------------------------|
| 208 0 | | |
| 3 1 | | |
| — | 641 4 | Plain work. |
| 183 0 | | |
| 1 2 | | |
| 2 8 | | |
| — | 569 4 | Cube of the cornice. |
| 180 0 | | |
| 2 1 | | |
| — | 375 0 | Superficial molded front. |
| 178 0 | | |
| 1 2 | | |
| — | 207 8 | The plain upper face of the cornice. |

N° 78.

9 A

The

Book X. The shed roofings are coped with stone with a a moulding on the edge. The whole length of which will be

| Feet In. | Feet In. | |
|--------------------|--------------------|----------------------------|
| 18 $\frac{1}{4}$ 0 | | |
| wide 1 0 | | |
| thick 1 4 | | |
| 18 $\frac{1}{4}$ 0 | 61 $\frac{1}{4}$ | Cube. |
| 1 0 | 18 $\frac{1}{4}$ 0 | Plain upper face. |
| 19 0 6 | 96 0 | Molded edge to the coping. |

There will in the execution of this work be about 400 n° of iron cramps, 12 inches long each, let into the stone-work, and run with lead to tie the joints together.

The stone door-case is composed of an architrave, frieze, and cornice, with scrolled pilasters. To measure it, first take the architrave jambs, and head, whose length together will be

| Feet In. | Feet In. | |
|--------------|----------|--|
| 21 6 8 | | |
| 1 2 | 16 8 8 | Cube Architrave jambs and head. |
| 7 9 4 8 | 2 3 5 4 | Cube Pilasters. |
| 1 3 4 0 | 2 0 10 | Cube of Scrolls |
| 5 6 4 6 | 0 11 | Cube of swelling frieze. |
| 6 6 0 8 1 0 | 4 4 | Cube of the level cornice. |
| 3 9 0 10 1 6 | 2 9 4 6 | Cube of raking Pediment. |
| 10 0 | 13 4 | Superficial plain jambs and soffite of architrave. |
| 10 8 | 13 9 4 | Sunk dowel and bond for door-case. |
| 1 9 | 2 7 9 | Plain front, and projection of Pilasters. |
| 1 8 6 | 2 1 8 | Molded front of scrolls. |

OF ARCHITECTURE.

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Chap. I.

| Feet In. | Feet In. Pts. | |
|-----------------|---------------|--|
| 1 3
6 | 4 2 6 | Plain sides of scrolls. |
| 5 4
6 | 2 8 | Molded front of swelling frieze. |
| 7 6
1 3 | 9 4 6 | Molded front and returns of level cornice. |
| 1 0
3 | 2 0 6 | Add the upper cima in the return. |
| 7 0
1 6 | 10 6 | Molded raking cornice. |
| 7 0
10 | 5 10 | Plain upper face of ditto. |
| 5 6
8 | 3 8 | Upper face of level cornice. |
| 7 6
1 6
6 | 5 7 6 | Cube portland step. |
| 7 6
1 6 | 11 3 | Plain upper face of ditto. |
| 10 6
6 | 5 3 | Plain front and ends. |

There will be two flights of stone steps from the parlour floor down to the cellars and they will be in number sixteen, and are to be measured their length three feet out of the wall, and should be nine inches in the wall; therefore the length of each step will be

| Feet In. | Feet In. | |
|------------------------|----------|--|
| 3 9
1 0
6 | 16 30 0 | Cube of the steps. |
| 1 6
3 0
1 6
6 | 16 111 6 | Plain work to the tread and rise, back front and under side, supposed wrought all round. |
| 1 6 | 8 0 | Plain end of steps. |

And as the practice of putting up stone steps is, after the walls are up and have taken their settlements, the mason is allowed one Shilling for each step letting into the wall.

Chimney-pieces, according as they are more or less in solidity, are measured by the foot superficial, are brought into cube feet, and the workmanship measured as in the like manner of portland, whether they be of marble or any other kind of stone; but in this estimate we shall only calculate three chimney-pieces to be of flat marble, two inches thick, as they are most in use; and two of Portland-stone of the same thickness.

Feet

| Back X. | Feet | In. | Pts. | |
|---------|------|-----|------|---|
| 11 2 | 3 | 27 | 11 | Marble mantle and jambs. |
| 10 | | | | |
| 273 4 | | | | |
| 9 | 3 | 15 | 0 | Slips and nosings. |
| 4 8 | | | | |
| 2 | 3 | 28 | 0 | Marble slab. |
| 11 2 | | | | |
| 10 | 2 | 18 | 7 4 | Portland mantle and jambs. |
| 2 3 4 | | | | |
| 9 | 2 | 10 | 0 | Slips and nosings. |
| 4 8 | | | | |
| 2 | 2 | 13 | 8 | Portland slabs. |
| 3 3 | | | | |
| 1 6 | 5 | 14 | 4 | Rygate stone hearths to all the chimneys. |
| 2 6 | | | | |
| 1 0 | 10 | 35 | 0 | Rygate covings or cheek-stones. |

Here follows the *Abstract*, which begins with the contents of cube feet in the plinth-
string and fascia.

| Cube feet
Feet In. Pts. | Superficial
Feet In. Pts. | Superficial
molded.
Feet In. Pts. | No Iron
Cramps.
400 | Flat marble
chimney-
pieces and
slabs 2 inches
thick.
Feet In. | Portland flat
chimney-
pieces.
Feet In. Pts. | Rygate
hearth and
covings.
Feet In. Pts. |
|----------------------------|------------------------------|---|---------------------------|---|---|---|
| 31 0 | 64 4 | 57 0 | | 18 7 4 | | 24 4 6 |
| 519 4 | 26 8 | 96 0 | | 27 11 | 10 0 | 35 0 |
| 61 4 | 18 0 | 13 9 4 | | 15 0 | 18 8 | |
| 16 8 8 | 13 4 | 1 8 | | 28 0 | | |
| 3 5 4 | 9 | 2 8 | | | | |
| 0 10 | 2 0 | 9 4 6 | | | 47 3 4 | |
| 0 11 | 5 1 | 0 6 | | 70 11 | | |
| 4 8 | 5 8 | 10 6 | | | | |
| 1 8 8 | 11 3 | | | | | |
| 3 8 8 | 5 3 | 509 5 10 | | | | |
| 3 8 8 | 11 2 | | | | | |
| 1 2 11 | 8 0 | | | | | |

P L U M B E R.

AS the roof to this edifice is designed for dripping eaves, there will be but little lead wanting, other than for the valleys, hips, and ridges; and to come at the quantity of lead, the lengths of the hips, valleys, and ridges must be taken, which several lengths put together will here be 160 feet, which \times by 2 feet, an allowance for the width = 320 feet; and as the common allowance is 7 pounds to the superficial foot, $320 \times 7 = 2240$ pounds \div 112 = 20 hundred weight of lead in the several hips, ridges, and valleys.

Lead for running the cramps to the stone-work will be about 5 0 0 C. gr. lb.

If

If, instead of dripping eaves, gutters were made in the roof, as is practised in Chap. 1. most buildings, there would then be a necessity for several rain-water-pipes to convey the water from off the building, the quantity we shall here calculate, principally to inform gentlemen and builders of the difference of that kind of work from the former; here would be wanting three stacks of pipes placed in the proper angles of the building, each in length 32 feet, making together 96 feet in length, which, according to the common sort made use of in London, each foot in length would weigh 9 pounds; this also should be brought into weight, and a price allowed in proportion, as will be shewed in the bill to follow. To find out the weight, take the given length 96 feet \times 9 pounds = 864 \div 112 pounds = 7 hundred 2 quarters and 24 pounds.

JOYNER.

FOR sashes and frames and wainscoting the three rooms on the ground-floor, and the two rooms over A A.

To measure the sashes and frames, the height must be taken from the extreme length of the frame, and its breadth from the outside to outside. The measure will then be

| Feet In. | Feet In. Pts. | |
|----------|---------------|---|
| 6 9 | | |
| 3 10 | | |
| 3 10 | 6 | 155 3 Two inches wainscot sashes and frames boxed, with lines and pullies included. |
| 3 10 | 10 | 146 11 4 Attick windows, also to the house and shed-buildings. |
| 4 0 | | |
| 8 0 | | |
| 3 0 | | 32 0 Two inches deal door framed flush on both sides to the entrance. |
| 6 0 | 4 | 72 0 Outside doors framed out of two-inch deal and flush. |

To wainscot the room C in the common way, with deal square-work, the framing should be 1 inch $\frac{1}{4}$ thick, and the pannels $\frac{1}{2}$ inch. To measure this room of wainscoting, add the four sides together, will be 60 feet four inches, take the height from the floor to the under side of the cornice, will be 10 feet 3 inches, which put down as a dimension.

| Feet In. | Feet In. | |
|----------|----------|--------------------------------|
| 60 4 | | |
| 10 3 | | |
| | | 618 5 Deal square wainscoting. |

The shutters being of the same kind of work, are measured with the wainscot of the room; but being wrought on both sides, must be again measured, and half their contents allowed for that extra work.

Book X.

| Feet | In. | Feet | In. | Pts | |
|------|-----|------|-----|-----|---|
| 2 | 3 | 8 | | | |
| 6 | 4 | | | | |
| 12 | 8 | 1 | 2 | 23 | 2 8 Half work to shutters. |
| 3 | 8 | | | 29 | 6 8 Back lining and boxing to shutters. |
| 10 | | | | 6 | 1 4 Soffites. |
| 4 | 0 | | | 16 | 0 Deduct the chimney. |
| 4 | 0 | | | 18 | 0 Deduct the door. |
| 3 | 0 | | | 12 | 9 Architrave round the door. |
| 6 | 0 | | | 75 | 1 4 Deal cornice round the room. |
| 17 | 0 | | | | |
| 9 | | | | | |
| 56 | 4 | | | | |
| 1 | 4 | | | | |

To finish the room next to letter C with deal-bead and flat pannels, the frame should be 1 inch $\frac{1}{2}$ thick, and the pannels of dram deal; the dimensions will be taken in the same manner as before; but this room being a little larger, the first dimension will be

| Feet | In. | Feet | In. | Pts. | |
|------|-----|------|-----|------|--|
| 62 | 4 | | | | |
| 10 | 3 | 638 | 11 | | Deal-bead wainfoting worked with flat pannels. |
| 2 | 3 | 8 | | | |
| 6 | 4 | | | | |
| 12 | 8 | 23 | 2 8 | | Half work to shutters. |
| 1 | 2 | 29 | 6 8 | | Back lining and boxing to shutters. |
| 3 | 8 | 6 | 1 4 | | Soffites. |
| 10 | | 16 | 0 | | Deduct the chimney. |
| 4 | 0 | 36 | 0 | | Deduct the doors. |
| 4 | 0 | 25 | 6 | | Architrave round the doors. |
| 3 | 0 | 80 | 5 4 | | Deal cornice round the room. |
| 6 | 0 | 36 | 0 | | Two inch deal doors, bead and flat pannels. |
| 17 | 0 | | | | |
| 9 | | | | | |
| 60 | 4 | | | | |
| 1 | 4 | | | | |
| 3 | 0 | | | | |
| 6 | 0 | | | | |
| 15 | 0 | | | | |
| 1 | 10 | | | | |
| 15 | 0 | | | | |
| 1 | 6 | | | | |

To introduce as many sorts of work in the joiners way as we can, we will calculate Chap. 1.
the next room, finished in the best manner now in practice in the most elegant buildings, which will be to wainscot it with ovolo and plain pannels with broad margins, viz. an ovolo stuck on the framing, which framing should be two inches thick and the pannels one inch; and in this sort of work the rails and stiles should be 6 or 7 inches wide, which are called broad margins. In this kind of finishing, a regular pedestal of some one of the orders of architecture should go round the room; therefore it will make some difference in the manner of measurement from the common way, as the works are of another kind. We will begin first to shew in what manner the pedestal is measured, which in this room will be 2 feet 7 inches high of the Ionick order.

| Feet | In. | Feet | In. | Pts. | |
|------|-----|------|-----|------|---|
| 48 | 4 | | | | Then 48 feet 4 inches will be the length of the Dado or plain part round the room. The height (as it goes behind its cap and base mould above and below) will be 2 feet, and this is called dado work in pedestals, and should be dovetail'd with pieces on the back to keep their joints together. |
| 2 | 0 | | | | |
| 7 | 10 | 96 | 8 | 0 | |
| 62 | 4 | | | | |
| 3 | 0 | 488 | 3 | 4 | Ovolo and flat pannels with broad margins, which is from the top of the pedestal to the under side of the cornice, allowing one inch top and bottom for nailing. |
| 0 | 0 | | | | Deduct windows, |
| 3 | 0 | 2 | 36 | 0 | |
| 6 | 0 | | | | Deduct doors, |
| 4 | 0 | 2 | 36 | 0 | |
| 4 | 0 | | | | Deduct the chimney; |
| 4 | 0 | 16 | 0 | | |

Here the shutters will be framed out of two-inch deal, the same kind of workmanship as the doors, and must be measured separate.

| Feet | In. | Feet | In. | Pts. | |
|------|-----|------|-----|------|---|
| 3 | 0 | | | | |
| 6 | 0 | 2 | 36 | 0 | Two-inch deal shutters framed with an ovolo and flat pannels, |
| 3 | 0 | | | | |
| 6 | 0 | 2 | 36 | 0 | Two-inch deal doors framed with an ovolo and pannels, |
| 12 | 8 | | | | |
| 1 | 2 | 2 | 29 | 6 | 8 Back lining and boxing to shutters. |
| 3 | 8 | | | | |
| 10 | | 2 | 6 | 1 | 4 Soffites ovolo and flat pannels. |

The mouldings are all to be taken separate from the other work; and, beginning with the cap and base mould of the pedestal, their lengths will be the same as the dado, 48 feet 4 inches, of which make a dimension and girt with a string, the cap mould of the pedestal and the base and plinth to ditto, and put their girts together, will make one foot five inches, by which the length is to be multiplied. The mouldings to the doors and windows will be architraves only, and measured as before.

A COMPLETE BODY

| <i>Feet In.</i> | <i>F.</i> | <i>I.</i> | <i>F.</i> |
|------------------|-----------|------------------|--|
| 4 ³ 4 | | | |
| 1 2 | | | |
| 17 0 | | 6 ⁰ 5 | Superficial deal mouldings to the pedestal. |
| 9 | | | |
| 58 4 | 4 | 51 0 | Superficial deal architrave round doors and windows. |
| 1 1 | | | |
| | | 63 2 4 | Bracketing prepared for plaster cornice. |

To the two rooms in the attick story there will only be two doors, shutters, and a skirting board round the rooms to receive the plaistering for hangings.

| Feet | In. | Feet | In. | |
|------|-----|------|------|---|
| 8 | 0 | | | |
| 6 | 0 | | | |
| | | 2 | 36 0 | One inch and half deal doors with bead and flat panels. |
| 3 | 0 | | | |
| 3 | 0 | | | |
| | | 5 | 45 0 | One inch and half deal shutters. |
| 12 | 0 | | | |
| | 10 | | | |
| | | 5 | 50 0 | Whole deal linings. |
| 15 | 0 | | | |
| 1 | 6 | | | |
| | | 2 | 45 0 | Door jambs and soffits. |
| 112 | 0 | | | |
| | 1 | | | |
| | | 56 0 | | Whole deal skirting beads. |
| 100 | 0 | | | |
| | 1 | | | |
| | | 50 0 | | Whole deal skirting board to the stair-case. |

Abstract of joiners work.

[illegible]

| | | | | | | | |
|--------------------------------|---|--|------------------------------|--|-------------------------|----------------|---|
| Lead and
flat pan-
nels. | 2 inch
dent doors
a dubiter-
terial and
flat
panels. | Whole
dent door
panels
batter
rabeted. | Who's
1 hinge
Flat In. | Who's
dent door
downward
on the | Ovolo and
with broad | Who's
broad | Bracketing
cornices.
Flat In. Pn. |
| Flat In. | Flat In. | Flat In. | Flat In. | Flat In. | 3 4 | 3 4 | 2 3 |
| | 36 0 | 56 0 | 56 0 | 29 6 8 | 29 6 8 | 36 0 | |
| | | 50 0 | 50 0 | 6 1 4 | 6 1 4 | 16 0 | |
| | | | | | | | |
| | | | | | 523 11 4 | 88 | |
| | | | | Deduct | 88 0 0 | | |
| | | | | | 9435 11 4 | | |
| | | | | | 48 yards 4 feet. | | |

PLASTERER.

ALL lathing and plastering, stucco on walls, and common rendering of walls are measured and reduced to square yards, which is $3 \times 3 = 9$ feet superficial, and there being different kinds of plastering we shall estimate the rooms, letters C D E, for ceilings of the most common sort.

| Feet In. | Feet In. | |
|----------|----------|--|
| 15 0 | | |
| 14 0 | | |
| 17 0 | 210 0 | Common lath and plaster ceiling, whitening included. |
| 10 0 | | |
| 34 0 | 2 340 0 | Ditto the rooms D E. |
| 10 0 | | |
| 3 0 | 340 0 | Hard finishing or stucco on brick-work to the room letter E. |
| 6 0 | | |
| 18 0 | | Deduct the door. |
| 34 0 | 340 0 | Common rendering and whitened to the room letter D. |
| 10 0 | | |
| 3 0 | | |
| 6 0 | 18 0 | Deduct the door. |

The plastering for the jambs of windows and chimneys will make good for the deductions.

To the rooms A we will put floated ceilings, which are the best kind, and to measure them, take the breadth of the room each way short one projection of the cornice, i. e. the rooms being 13 feet square, the dimensions for the ceiling will be

| Feet In. | Feet In. | |
|----------|-----------|---|
| 14 0 | | |
| 14 0 | 2 406 1 6 | Floated lath and plaster ceiling. |
| 56 0 | | |
| 1 4 | 2 74 8 | Plaster cornice to one of the rooms. |
| 56 0 | | |
| 0 10 | 2 93 4 | Six inches plaster cornices to the attick rooms. |
| 14 6 | | |
| 14 6 | 2 420 6 | Floated lath and plaster ceilings to ditto. |
| 60 0 | | |
| 7 0 | 420 0 | Walls rendered and floated for hangings. |
| 3 0 | | |
| 6 0 | 2 36 0 | Deduct doors. |
| 46 0 | | |
| 20 0 | 920 0 | Rendering floated to the walls of the stair-case. |

N^o 78.

9 C

Feet

A COMPLETE BODY

| Book X. | Feet In. | Feet In. | |
|---------|----------|----------|---|
| | 15 0 | | |
| | 8 0 | | |
| | 3 0 | 2 | 24 0 0 Lath and plaister floated to ceilings. |
| | 6 0 | | |
| | 15 0 | 6 | 108 0 Deduct doors from rendering. |
| | 14 0 | | |
| | | 210 0 | Common lath and plaister ceiling to the stable. |

A B S T R A C T.

| Common lath and plaistering. | Hard finishing or stucco on bricks. | Deduct stucco on bricks. | Common rendering. | Deduct common rendering. | Floated lath and plaister. | Plain plaister cornice. |
|------------------------------|-------------------------------------|--------------------------|-------------------|--------------------------|----------------------------|-------------------------|
| Feet In. | Feet In. | Feet In. | Feet In. | Feet In. | Feet In. | Feet In. |
| 210 0 | 340 0 | 18 0 | 340 0 | 18 0 | 406 1 6 | 74 8 |
| 340 0 | Dt. 18 0 | | Dt. 18 0 | | 420 6 0 | 93 4 |
| 210 0 | | | 9 22 0 | | 240 0 0 | |
| 9)760 0 | 9)322 0 | | 35 yards 7 feet. | | 9)1066 7 6 | 163 0 |
| | 35 yards 7 feet. | | | | 118 yards 4 feet. | |
| | 84 yards 4 feet. | | | | | |

| Rendering floated. | Deduct rendering floated. |
|--------------------|---------------------------|
| Feet In. | Feet In. |
| 420 0 | |
| 920 0 | 36 0 |
| 1340 0 | 108 0 |
| 144 0 | 144 0 |
| 9)1196 0 | |
| 132 yards 8 feet. | |

G L A Z I E R.

ALL glafs-work is meafured by the foot fuperficial; and to meafure the glafs in fathes, the height and width of the fafh muft be taken, but no more than the glafs extends in the rabet: as here the fafh will be 2 feet 10 inches wide, it muft be taken but 2 feet 7 inches for the glafs. 5 feet 9 inches high, muft be taken but 5 feet 6 inches. Therefore the dimenfion for the lower ftory of windows will be

| Feet In. | Feet In. Pts. | |
|----------|---------------|---|
| 5 6 | | |
| 2 7 | | |
| 2 7 | 6 | 85 3 0 Crown-glafs in fathes. |
| 2 7 | | |
| 2 7 | 5 | 33 4 5 Ditto to the atticks. |
| 2 7 | | |
| 2 7 | 4 | 26 8 4 Cattle-glafs in fathes to the offices D E. |
| 2 7 | | |
| 2 7 | 2 | 13 4 2 Cattle-glafs in lead-work to the ftale. |

A B S T R A C T.

ABSTRACT.

Chap. I.

| Crown-glass
in sashes. | Castle-glass
in sashes. | Castle-glass
in lead-work |
|---------------------------|----------------------------|------------------------------|
| Feet In. Pts. | Feet In. Pts. | Feet In. Pts. |
| 85 3 0 | 26 8 4 | 13 4 2 |
| 33 4 5 | | |
| 118 7 5 | | |

S M I T H.

FOR plain iron railing to one story of stone steps down to the cellars, weight
4 C. 2 qrs.

6 C. 3 qrs. weight of iron in cramps and holdfasts.

64 pair of eight-inch sash hinges to shutters.

64 pair of six-inch ditto to back shutters.

10 pair of twelve-inch FL hinges to doors.

PAINTERS work, which comes the last in finishing of a building, is measured by the foot superficial, and brought into square yards, and requires rather more care than any extraordinary judgment in the measurement, as there is no great difficulty in taking the dimensions; for wherever the brush has gone the line must be laid: therefore to measure a room of painters work, the four sides must be taken for the length, as by the joiner; but the height must be girt by a line bending it into every moulding; so that the dimension of the room C, 60 feet 4 inches will be the same as to the joiner; but the height by girting it will gain 6 inches, which will make the dimension for the painting.

| Feet In. | Feet In. | |
|----------|----------|---|
| 60 4 | | |
| 10 9 | | |
| 6 0 | 648 7 | Painting in common colour three times in oil. |
| 4 0 | | |
| 2 48 0 | | Add for the back and edges to the shutters. |
| 17 0 | | |
| 3 | 4 3 | Back edge to the architrave. |
| 16 0 | | |
| 1 0 | 32 0 | Jambs and soffites to windows. |
| 4 0 | | |
| 4 0 | 16 0 | Deduct the chimney. |
| 62 4 | | |
| 10 9 | 670 1 | Painting to the room A. |
| 6 0 | | |
| 4 0 | 48 0 | Add for the back and edges to the shutters. |
| 17 0 | | |
| 3 | 8 6 | Back edge to the architraves. |

Feet

A COMPLETE BODY

| Book X. | In. | Out. | Particulars |
|---------|-----|------|--|
| 16 | 0 | | |
| 1 | 0 | | |
| <hr/> | | 2 | 5 2 0 Jambs and soffites to the windows, |
| 16 | 0 | | |
| 1 | 10 | | |
| <hr/> | | 2 | 5 3 S Jambs and soffites to doors. |
| 60 | 4 | | |
| 1 | 4 | | |
| <hr/> | | | |
| + | 0 | | |
| 4 | 0 | | |
| <hr/> | | | |
| | | 0 | 5 4 Painting to the wood cornice. |
| | | 16 | 0 Deduct the chimney. |

To the room wainscoted with ovolo and flat pannels.

| <i>F. et. In.</i> | <i>F. et. In. Pts.</i> | |
|-------------------|------------------------|------|
| 62 4 | | |
| 10 10 | | |
| <hr/> 6 0 | | |
| 4 0 | | |
| <hr/> 17 0 | 2 | 48 0 |
| 3 | | |
| <hr/> 16 0 | 2 | 8 6 |
| 1 0 | | |
| <hr/> 4 0 | 2 | 32 0 |
| 4 0 | | |
| <hr/> 16 0 | | |

The height will girt 10 feet 10 inches.

Add for the back and edges to the shutters.

Back edges to the architraves.

Jambes and soffits to windows.

Deduct the chimney.

150 yards may be allowed for painting the one pair of stairs rooms and back offices;

16 N' of fish frames painted three times.

132 N° of fish squares ditto.

A B S T R A C T.

| | | | |
|--|---|--|--|
| Painting 3
times in oil
common co-
ast. | 3 | Deduct from
painting 3
times in oil. | 16 N ^o of
frames. |
| <i>Feet</i> <i>ln.</i> | | <i>Feet</i> <i>ln.</i> | 132 N ^o of
fash iquares. |
| 48 | 7 | 16 | 0 |
| 48 | 0 | 16 | 0 |
| 4 | 3 | | |
| 12 | 0 | 48 | 0 |
| 0 | 1 | | |
| 48 | 0 | | |
| 8 | 6 | | |
| 32 | 0 | | |
| 33 | 8 | | |
| 10 | 5 | 4 | |
| 7 | 3 | 4 | |
| 48 | 0 | | |
| 8 | 0 | | |
| 32 | 0 | | |
| 2376 | 3 | 8 | |
| Deduct 48 | 0 | 0 | |

9²; 18 3 8

258 yards 6 feet.

Add 100

408 yards 6 feet.

Having

Having shewn the manner of measuring the several artificers works, and the method of abstracting the quantities into general heads, we shall conclude with drawing up the regular bills from those abstracts, with prices put to each article as the works may reasonably be done. Chap. 1.

The first bill therefore will be for digging out the foundations. See page 724.

D I G G E R.

Yards Feet

To 268 16 cubical of digging out the foundations and clearing away *l. s. d.*
the rubbish, at 1*s.* 8*d.* per yard, - - - 22 7 8

B R I C K L A Y E R, page 723.

Rods Feet

32 39 of brick-work reduced to 1 brick and $\frac{1}{2}$ in thickness,
including the facing the front with grey stock bricks,
two loads of lime and two loads of sand to a rod,
at 5*l.* 15*s.* per rod, - - - - 184 16 6

Feet Inches

65 0 superficial of rubbed and gaged arches to the windows,
at 1*s.* 4*d.* per foot, - - - - 4 6 3

Yards

63 3 of flat brick paving, at 1*s.* 6*d.* per yard, - - - 4 15 0
37 7 foot-tyle paving, at 3*s.* 9*d.* per yard, - - - 7 1 8
22 4 of paving with Dutch clinkers, at 3*s.* 6*d.* per yard, - - 3 18 6 $\frac{1}{2}$

Note, The common price of bricks are,

| | <i>l.</i> | <i>s.</i> | <i>d.</i> |
|--|-----------|-----------|-----------|
| Place-bricks per thousand - - - - | 0 | 14 | 0 |
| Grey stock bricks per thousand - - - | 1 | 0 | 0 |
| Red stock bricks per thousand - - - | 1 | 10 | 0 |
| Plain tiling with oak heart laths will be per square | 1 | 6 | 0 |
| Old plain tiling rip'd, new laid, and the defective
tyles made good, per square - - - - | 0 | 16 | 0 |
| New pantyling, pointed and laid in lime and hair,
per square - - - - - | 1 | 1 | 0 |
| Old ditto, rip'd and new laid in lime and hair
at per square - - - - - | 0 | 10 | 0 |
| Dutch glazed pantyling at per square - - - | 1 | 15 | 0 |

Four thousand five hundred of bricks is the common allowance to a rod of work.

S L A T E R, page 728.

Square Feet

29 33 of slating done with Tavistock slates, laid in good lime *l. s. d.*
and hair, to a full gage, on boards, at 1*l.* 14*s.* per
square, - - - - - 49 17 2 $\frac{1}{2}$

Note, If laid on laths, the laths included will be 1*l.* 12*s.* per square.

Slating with Westmorland slates, which is the best covering for capital buildings,
and not inferior to lead for its use, if well performed, is done for 2*l.* 15*s.* per square.

N^o 79.

9 D

C A R P E N -

Book X.

CARPENTER, page 737.

Sq. Feet In. Pts.

| | | | | | | | | | | | |
|-----|----|---|--|---|---|---|---|---|----|----|-----------------|
| 6 | 10 | 8 | cube fir door-cases, planed framed, and rabbetted,
at 2s. 6d. per foot | - | - | - | - | - | 0 | 17 | 2 $\frac{1}{2}$ |
| 1 | 0 | 0 | cube oak door cills at 3s. 6d. per foot | - | - | - | - | - | 0 | 3 | 6 |
| 158 | 2 | 0 | rough fir lintels, discharging pieces, and bond-timber,
at 1s. 8d. per foot, | - | - | - | - | - | 13 | 3 | 7 $\frac{1}{4}$ |
| 14 | 47 | 0 | naked flooring, the girders 12 inches square, bind-
ing joists 9 inches by 4 inches, bridges 4 inches
square, and cieling joists 3 inches square, contain-
ing 25 cubical feet in a square, at 1s. 10d. per
foot cubical, will be 2l. 5s. 10d. per square, | - | - | - | - | - | 33 | 0 | 11 |
| 6 | 72 | 0 | of cieling floor to the roof, joists 9 inches by 2
inches and $\frac{1}{2}$, and cieling joists 4 inches by 3 inches,
containing 12 cube feet of fir in a square, will be
1l. 2s. per square | - | - | - | - | - | 7 | 7 | 10 |
| 11 | 88 | 0 | of trufs roofing, containing about 28 cubical feet, at
the rate of 2s. 4d. per foot cubical, will be 3l.
5s. 4d. per square, | - | - | - | - | - | 38 | 16 | 1 $\frac{1}{2}$ |
| 42 | 8 | 0 | rough fir framed in plates to ditto, at 1s. 8d. per foot | - | - | - | - | - | 3 | 11 | 1 $\frac{1}{2}$ |
| 13 | 92 | 0 | shed roofing and its cieling floor, containing 24
cubical feet to the square, at 2l. 4s. per square, | - | - | - | - | - | 30 | 12 | 5 $\frac{1}{4}$ |

We have here set down the cubical feet of fir contained in a square of the different kinds of works in the several floors and roofing, to inform the reader that to come at the just value of a square of naked floor and roofing, he must first calculate the quantity of timber contained in it, otherwise the price he charges may be at a great uncertainty.

This method of measuring naked floors and roofs by the square is of very little use, since it is a much better way, and more correct to take the dimensions of all the timbers and abstract them into one general head of cube feet, and a price put to it according to the nature of the work.

Cube fir framed in naked floors is worth 1l. 10s. per foot.

In trufs-roofing, a larger price is allowed for the extraordinary labour in framing, and the letting in of bolts and screws.

| | |
|--|--------------|
| | <i>s. d.</i> |
| All fir laid in walls, rough and not framed, is worth per foot cubical | 1 3 |
| Oak in the like manner used rough and not framed | - - 2 8 |
| Oak framed in floors and partitions | - - - - 3 0 |

Page 733.

Sq. Feet

| <i>Sg. l. s. d.</i> | | | | <i>l. s. d.</i> | |
|---------------------|----|--|---|-----------------|----------------------|
| 2 | 3 | right waincot dowel'd floor, at 5 <i>l.</i> 10 <i>s.</i> square, | - | - | 11 3 3 $\frac{1}{2}$ |
| 2 | 18 | of clean deal floor dowel'd, at 5 <i>l.</i> per square, | - | - | 10 18 0 |
| 2 | 18 | of second best dowel'd floor, at 3 <i>l.</i> 10 <i>s.</i> per square, | - | - | 7 12 7 $\frac{1}{4}$ |
| 2 | 18 | best streight joint floor nailed, at 2 <i>l.</i> 5 <i>s.</i> per square, | - | - | 4 18 1 $\frac{1}{2}$ |
| 2 | 18 | of common folding joint floor, at 1 <i>l.</i> 10 <i>s.</i> per square, | - | - | 3 5 4 $\frac{1}{2}$ |
| 4 | 20 | rough whole-deal boarding, at 1 <i>l.</i> 4 <i>s.</i> per square, | - | - | 5 0 9 $\frac{1}{2}$ |

OF ARCHITECTURE.

747

| | | | | | | | | | |
|--|---|---|---|---|---|---|----|---|----------|
| 22 n° of steps of stairs clean deal, with strings and bearers, and 3 feet going, each 5s. | - | - | - | - | - | 5 | 10 | 0 | Chap. I. |
| 120 feet superficial clean deal quarter paces and landings, including their joists and bearers, at 1s. per foot, | - | - | - | - | - | 6 | 0 | 0 | |
| 25 feet running of turned rail and banister, 2 inches diameter, at 2s. per foot, | - | - | - | - | - | 2 | 10 | 0 | |

MASON, page 733.

| <i>Feet In. Pts.</i> | | <i>l. s. d.</i> |
|----------------------|--|-----------------|
| 935 11 0 | cubical of Portland stone, at 2s. per foot, | 93 11 10 |
| 1234 7 0 | superficial plain work of ditto, at 10d. per foot, | 51 8 9½ |
| 509 5 10 | superficial molded Portland work, at 1s. per foot, | 25 9 5½ |
| | Nº 400 iron cramps let into stone work, 2d. each, | 3 6 0 |
| 70 11 0 | superficial of flat marble in chimney-pieces and slabs, 2 inches thick, at 6s. per foot | 21 5 6 |
| 47 3 4 | flat molded white and vein'd Portland chimney-pieces, 2 inches thick, at 1s. 4d. per foot, | 3 3 0½ |
| 59 4 6 | superficial of Rygate or fire-stone in hearths and covings, at 1s. per foot | 2 19 4½ |

PLUMBER, page 736.

C. grs. lb.

| | | |
|-----------|--|--------|
| To 20 0 0 | of sheet-lead (cast or mill'd) in hips, ridges, valleys, &c. to the roof, carriage and the labour of laying included, 18s. per C. weight, | 18 9 0 |
| To 5 0 0 | lead delivered for running of cramps, at 17s. per C. weight, | 4 5 0 |
| 7 2 24 | of lead in rain-water cisterns and rain-water pipes, that convey the water from off the building, folder and workmanship included, at 1l. 3s. per C. weight. | |

It has for a long time been, and is, a common custom for the plumber to charge rain-water pipes by the foot running measure, and the cistern heads at a certain price each, without ascertaining the weight of either; but in publick offices where the value of materials are carefully looked into and well adjusted, rain-water cisterns and pipes are brought into weight, and done at the rate of one pound three shillings per C. weight, which is five shillings more per C. than is allowed for lead in flats and gutters, on account of the extraordinary labour in the pipes and cisterns: so that unless the builder contracts with his plumber for all his lead by weight, he will often find himself greatly imposed upon.

JOINER, page 737.

| <i>Feet In. Pts.</i> | | <i>l. s. d.</i> |
|----------------------|--|-----------------|
| 302 2 4 | two-inch wainscot fashes and frames, including lines and pullies, at 2s. per foot, | 30 4 5 |
| 104 0 0 | two-inch deal doors flush on both sides, at 1s. per foot, | 5 4 0 |
| 72 0 0 | two-inch deal doors and shutters ovolo and flat pannels, at 1s. per foot, | 3 12 0 |
| 81 0 0 | one inch and half deal doors and shutters, bead and flat pannels, at 9d. per foot, | 3 0 9 |

Tds

A COMPLETE BODY

| | <i>Yds. Feet</i> | <i>In. Pts.</i> | | <i>l. s. d.</i> |
|---------|------------------|-----------------|---|-----------------------|
| Book X. | 71 | 4 0 0 | of deal square wainscoting, at 2 s. 6 d. per yard, - - | 8 18 7 $\frac{1}{2}$ |
| | 71 | 6 0 0 | of deal bead wainscoting with flat pannels, at 3 s. per yard, - - | 10 15 0 |
| | 313 | 3 4 | superficial deal cornices and other mouldings, at 1 s. per foot, - - - - - | 15 13 2 $\frac{1}{4}$ |
| | 36 | 0 0 | of two-inch doors and shutters, bead and flat pannels, at 10 d. per foot, - - - - - | 1 10 0 |
| | 20 | 0 0 | of whole deal door-jambs and soffites rabbetted, at 6 d. per foot, - - - - - | 1 5 0 |
| | 201 | 0 0 | of whole deal plain linings, at 5 d. per foot, - - - - - | 4 3 9 |
| | 96 | 8 0 | of whole deal d.do dovetail'd on the back side, at 6 d. per foot, - - - - - | 2 8 4 |
| | 48 | 4 0 0 | of ovolo and flat pannels with broad margins, at 4 s. 6 d. per yard, - - - - - | 10 18 0 |
| | 93 | 2 4 | of bracketing for plaister cornices, at 4 d. per foot, - - - - - | 1 11 6 $\frac{1}{8}$ |

PLAISTERER, page 741.

| <i>Yds. Feet</i> | <i>l. s. d.</i> |
|------------------|--|
| 84 4 | common lath and plaistering, whitening included, at 9 d. per yard, 3 3 4 |
| 35 7 | hard finishing or stucco on bricks, at 1 s. 4 d. per yard, - - 2 7 5 $\frac{1}{2}$ |
| 35 7 | of common rendering on walls, at 3 $\frac{1}{2}$ d. per yard, - - 0 10 5 $\frac{1}{2}$ |
| 132 8 | of rendering floated, at 5 $\frac{1}{2}$ d. per yard, - - - 3 0 11 $\frac{1}{4}$ |
| 118 4 | of lath and plaister ciellings floated, fir laths, at 1 s. per yard, - 5 18 4 |
| 168 | superficial plain plaister cornices, at 6 d. per foot, - - - 4 4 0 |

Note, Hard finishing or stucco on oak laths, with three coats of stuff, and trowel'd smooth, may be done for 1 s. 9 d. per yard.

GLAZIER, page 742.

| <i>Feet In. Pts.</i> | <i>l. s. d.</i> |
|----------------------|--|
| 118 7 5 | superficial crown-glass in sashes, at 1 s. 4 d. per foot, - 7 18 2 $\frac{1}{4}$ |
| 26 8 4 | castle or common glass in sashes, at 9 d. per foot, - - - 1 0 0 $\frac{1}{8}$ |
| 13 4 2 | castle glass in lead work, at 7 d. per foot, - - - 0 7 9 $\frac{1}{8}$ |

SMITH, page 743.

| <i>C. grs. lb.</i> | <i>l. s. d.</i> |
|--------------------|---|
| 4 2 0 | of plain iron railings to stone stairs, at 3 $\frac{1}{2}$ d. per pound, - 7 17 6 |
| 6 3 0 | of iron in cramps and holdfasts, at 4 d. per pound, - - 12 12 0 |
| 64 | pair of eight-inch side hinges to shutters, at 1 s. 3 d. per pair, 3 19 4 |
| 64 | pair of six-inch ditto to the back shutters, at 10 d. per pair, 2 13 4 |
| 10 | pair of twelve-inch FL hinges to doors, at 3 s. 6 d. per pair, 1 15 0 |

PAINTER, page 744.

| <i>Yds. Feet</i> | <i>l. s. d.</i> |
|------------------|---|
| 408 6 | of painting 3 times done in oil, stone colour, at 6 d. per yard, 10 4 4 |
| 16 | Nº of sash frames 3 times done, each 1 s. 2 d. - - 0 18 8 |
| 132 | Nº of sash squares 3 times done, each 1 $\frac{1}{2}$ d. - - 0 16 6 |

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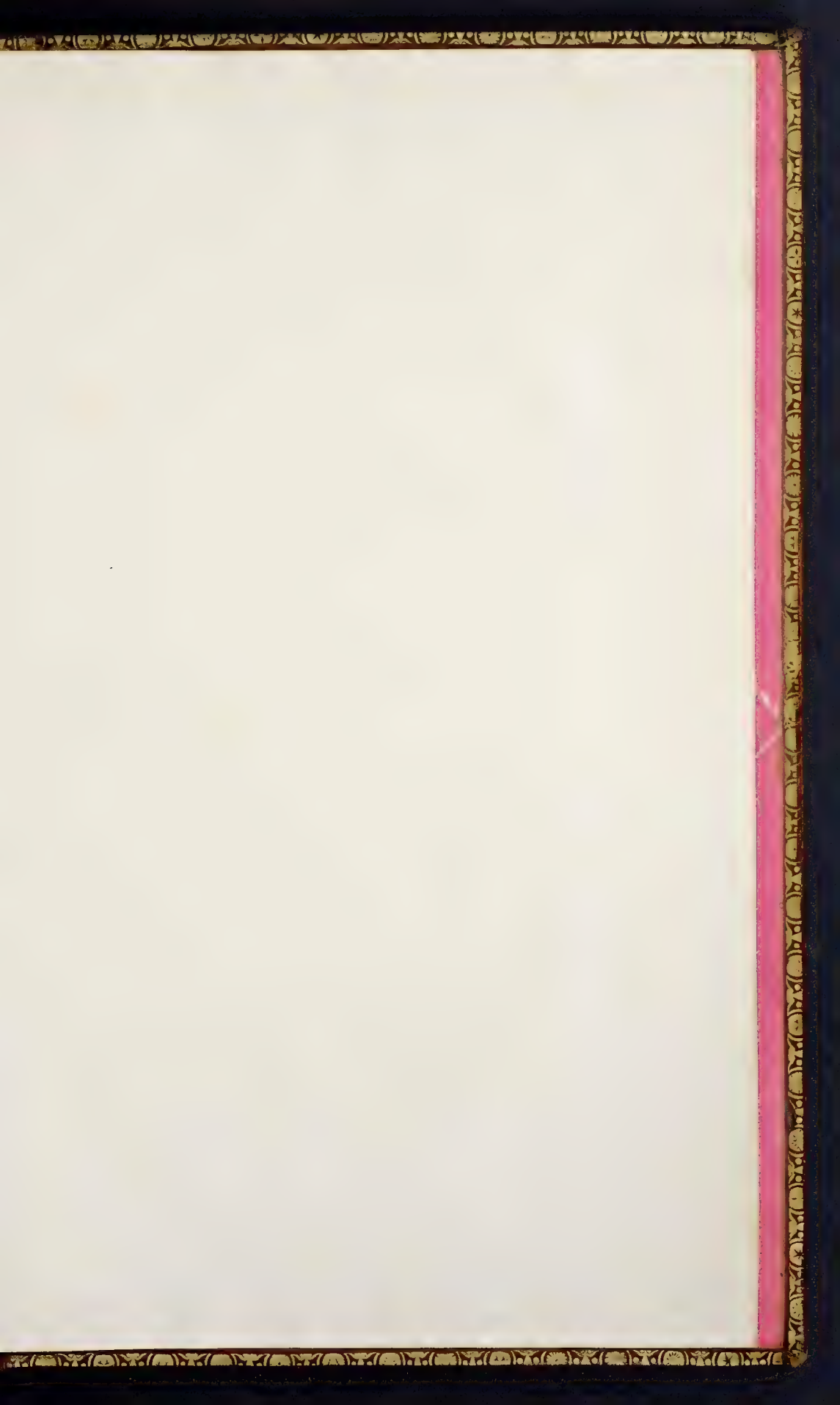
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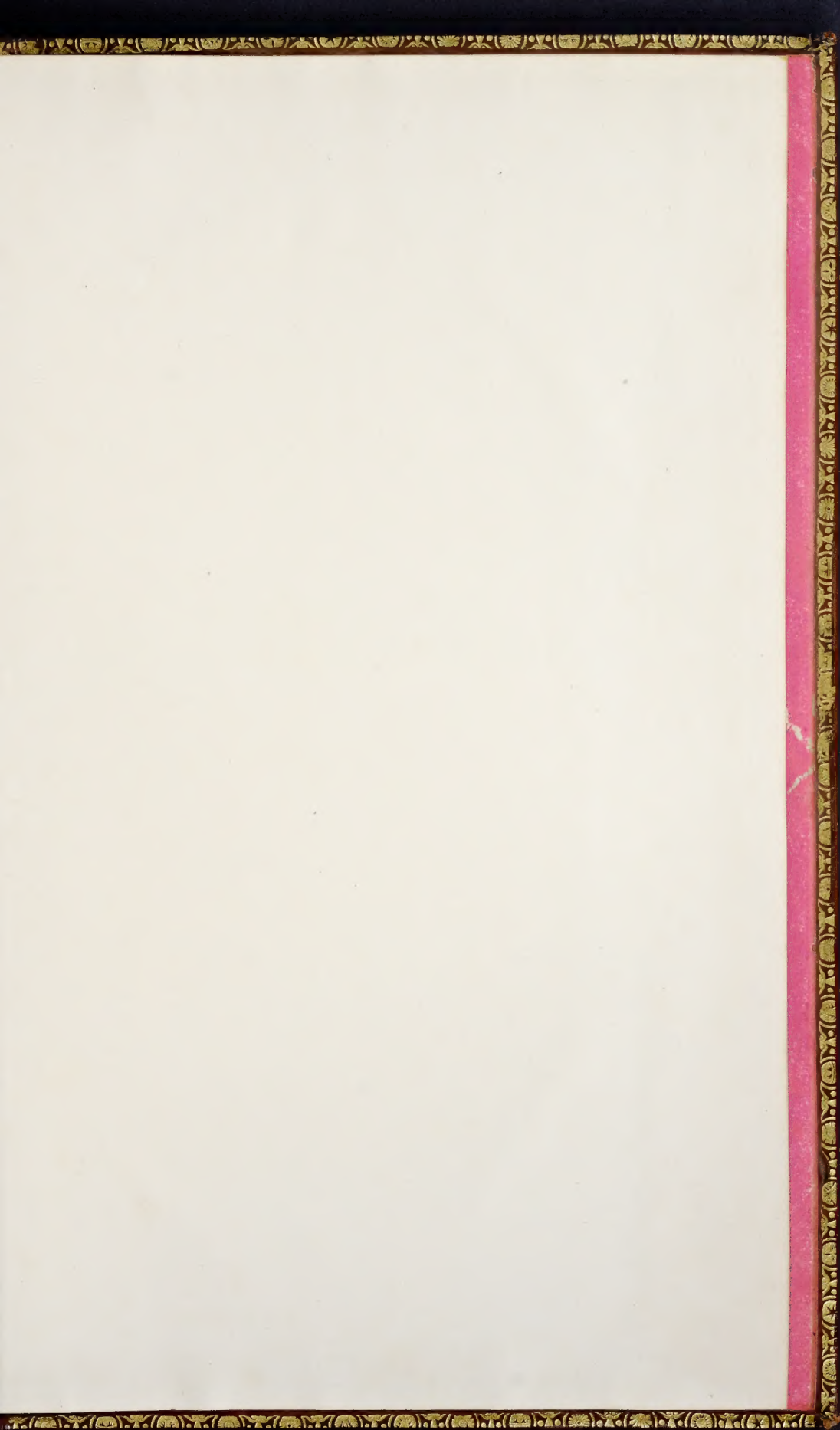
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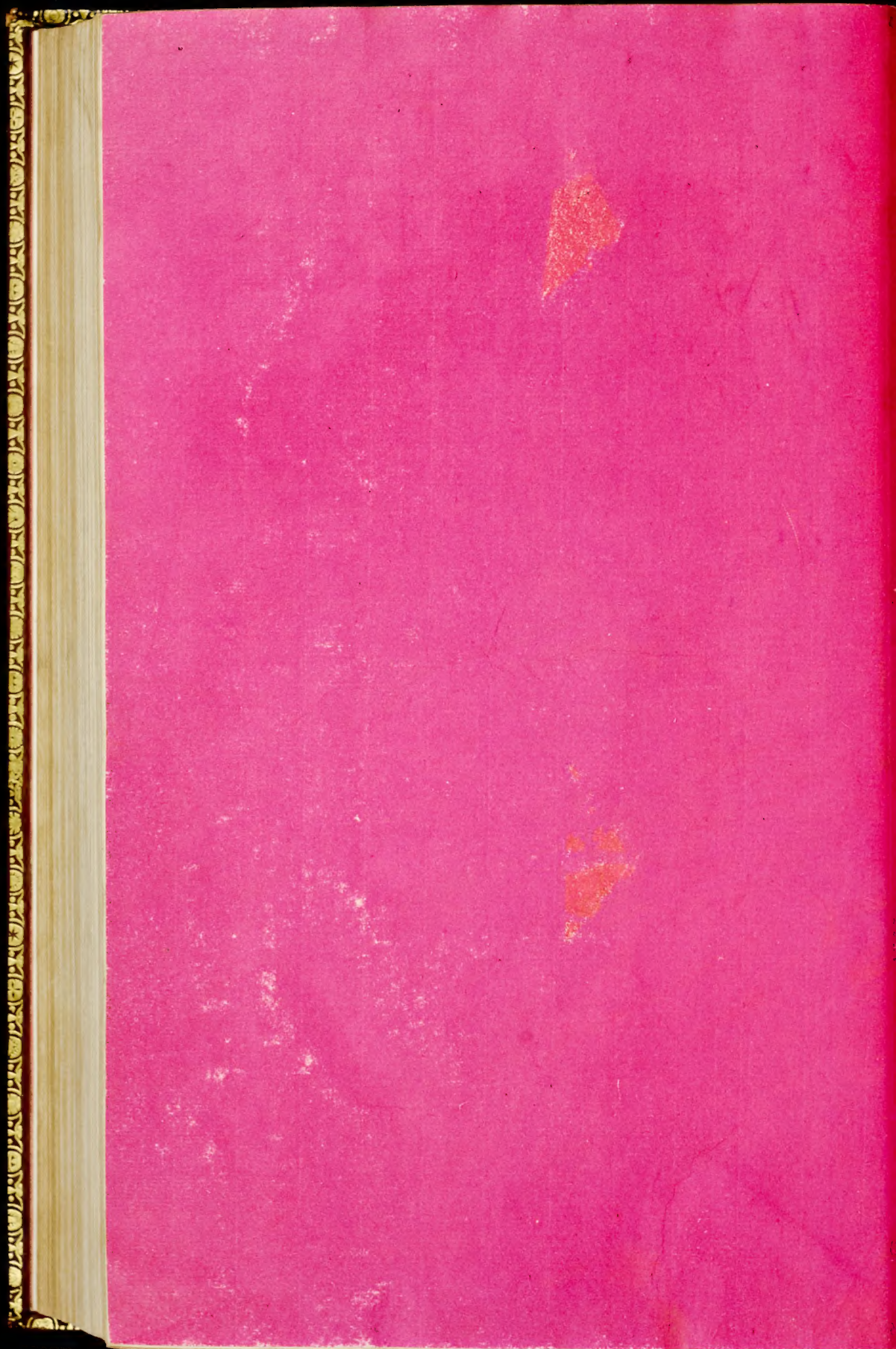
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